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**TB CARE I**



**TB CARE I - Indonesia  
Final Report**

**October 1, 2010 – December 31, 2014**

# **TB CARE I - Indonesia Final Report**

**October 1, 2010 – December 31, 2014**

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**Cover photo:** Young girl with primary MDR-TB, Makasar, 2014 (Jan Voskens)

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## Acronyms

AK	<i>Alur Klinis</i> (Clinical Pathway)
APA	Annual plan of activity
ART	Anti-retroviral therapy
ATM	Aids, tuberculosis malaria
ATS	American Thoracic Society
BBLK/ BLK	<i>Balai Besar Laboratorium Kesehatan/Balai Laboratorium Kesehatan</i> (Provincial Health Laboratory)
BPJS	<i>Badan Penyelenggara Jaminan Sosial</i> (National Health Insurance Provider/Agency)
B POM	<i>Badan Pengawas Obat dan Makanan</i> (National Drug and Food Control Agency)
BPPM	<i>Bina Pelayanan Penunjang Medik</i> (Medical Laboratory Support Services)
BPPSDMK	<i>Badan Pengembangan dan Pemberdayaan Sumber Daya Manusia Kesehatan</i> (The Agency for Development and Empowerment Human Resource of Health)
BPSDM	<i>Badan Pengembangan Sumber Daya Manusia</i> (Human Resources Development Agency)
BSC	Biological safety cabinet
C/DST	Culture/drug sensitivity test(ing)
CBO	Community-based organization
CCM	Country Coordinating Mechanism
CEPAT	Community empowerment of people against Tuberculosis
C-GAT	Country GeneXpert Advisory Team
CME	Continuing Medical Education
CPT	Co-trimoxazole Prevention Therapy
CSO	Civil society organization
Ditjen BUK	<i>Direktorat Jenderal Bina Upaya Kesehatan</i> (Directorate General of Health Efforts)
Ditjenpas	<i>Direktorat Jenderal Pemasyarakatan</i> (Directorate General of Corrections)
DM	Diabetes mellitus
DOTS	Directly Observed Treatment – Short Course
EPT	Expert patient trainer
EQA	External quality assurance
FAST	Finding TB case Actively, Separating safely, and Treating effectively
FBO	Faith-based organization
FHI 360	Family Health International 360
FLD	First line drug
GF	Global Fund
GP	General practitioner
HCW	Health care worker

HDL	Hospital-DOTS linkage
HIV	Human immunodeficiency virus
HRD	Human resources department
IAI	<b><i>Ikatan Apoteker Indonesia</i></b> (Indonesian Pharmacists Association)
IC	Infection control
IMA	Indonesian Medical Association
INH	Isoniazide
IPT	Isoniazide Prevention Therapy
ISTC	International Standards for Tuberculosis Care
JATA	Japan Anti Tuberculosis Association
JKN	<b><i>Jaminan Kesehatan Nasional</i></b> (National Health Insurance System/Scheme)
KARS	<b><i>Komite Akreditasi Rumah Sakit</i></b> (National Committee of Hospital Accreditation)
LMIS	Logistics Management Information System
LQAS	Lot quality assurance sampling system
M&E	Monitoring and evaluation
MDR	Multi-drug resistant
MIFA	Management Information For Action
MoH	Ministry of Health
MSH	Management Sciences for Health
NAP	National AIDS Program
NGO	Non-government organization
NRL	National Reference Laboratory
NSP	National Strategic Plan
NTP	National Tuberculosis Program
NTPS	National TB Prevalence Survey
OR	Operational research
PCA	Patient-centered approach
PDPI	<b><i>Perhimpunan Dokter Paru Indonesia</i></b> (Indonesian Pulmonologists Association)
PLHIV	People living with HIV
PMDT	Programmatic Management of Drug-Resistant Tuberculosis
PNPK	<b><i>Pedoman Nasional Pelayanan Kedokteran</i></b> (National Guidelines for Medical Practice Standards)
PPK	<b><i>Pedoman Pelayanan Klinis</i></b> (Clinical Practice Guidelines)
PPM	Public-private mix
PSM	Procurement supply management
PUSDATIN	<b><i>Pusat Data dan Informasi</i></b> (Center for Data and Information)
Puskesmas	<b><i>Pusat kesehatan masyarakat</i></b> (Public health center)
QA	Quality assurance
SITT	<b><i>Sistem Informasi Tuberculosis Terpadu</i></b> (Integrated TB Information System)
SLD	Second line drug
SOP	Standard operating procedure
SRL	Supranational Reference Laboratory

SSF	Single Stream Funding
TA	Technical assistance
TB	Tuberculosis
TB CAP	Tuberculosis Coalition Assistance Program
TORG	Tuberculosis Operational research Group
UGM	Universitas Gadjah Mada
UHC	Universal health coverage
UI	University of Indonesia
USAID	United State Agency for International Development
WHO	World Health Organization

## 1. Executive Summary

TB CARE I was a cooperative program of a coalition of seven international tuberculosis (TB) control organizations led by KNCV Tuberculosis Foundation (KNCV), and served as one of the main mechanisms to contribute to the achievement of the TB control goals and targets of the U.S. Agency for International Development (USAID) in selected high-burden countries by 2015.

As the follow-on to the Tuberculosis Control Assistance Program (TB CAP) of 2005-2010, TB CARE I was initiated as a five-year cooperative agreement running from October 2010 until September 2015. Since funding ceilings were reached sooner than expected program activities had to be ended nine months earlier.

Indonesia is the largest of the TB CARE I countries in terms of both size and financial investment. The TB CARE I-Indonesia country project has worked in all eight technical areas of TB CARE I. Building on the foundations laid by TB CAP, it has continued to provide technical assistance (TA) to the National Tuberculosis Program (NTP) of the Ministry of Health (MoH) of the Republic of Indonesia, as well as extending TA to provincial health offices (PHOs) in 10 provinces (covering public health services to 65% of the Indonesian populace) and also, collaborating with civil society organizations (CSOs) concerned with TB.

Over the lifespan of TB CARE I-Indonesia, the NTP, with support from GF, USAID and international partners, has made significant strides in expanding universal access to quality TB care in the public sector. There is almost full DOTS coverage at public health center (*puskesmas*) level, while substantial progress has been made in the engagement of general hospitals (hospital-DOTS linkages): the number of these hospitals implementing good quality DOTS expanded from 127 (2011) to 265 (2014) in TB CARE I-supported areas. The number of TB patients notified by these hospitals increased from 32,708 in 2010 to 54,004 in 2013.

During the Project, the number of PMDT sites has expanded from 2 to 26 fully operational PMDT referral centers in 24 provinces, along with 9 sub-referral hospitals and 698 satellites. The number of presumptive MDR-TB patients screened by the NTP significantly increased from 148 patients in 2009 to 7,412 patients in 2014. Cumulatively, over the full five-year period, 15,637 presumptive MDR-TB patients were screened, of whom 4,009 were confirmed to have MDR-TB/RR-TB, and 2,681 were enrolled for SLD treatment.

A significant reduction in treatment delay was achieved; however, only 18% of confirmed cases started treatment within seven days, and delays of up to six months were also observed in some new PMDT sites. Main factors are lack of socio-economic support for patients, loss of income, high transportation costs, doctor delay and limitations in counseling skills.

MDR-TB targets have not been met due to several factors, including low utilization of present screening and diagnostic capacity (only 15% of Xpert screening capacity is actually being utilized by clinicians), limitations in sputum transportation from health facilities to laboratories, patients refusing treatment, high rates of default and patient mortality.

TB CARE I-Indonesia aimed to have at least one PMDT referral hospital in each province by 2015, supported by sub-referral hospitals, with decentralization of patients to the nearest satellite facility in order to overcome access barriers and address the logistical challenges related to daily treatment intake. During the rapid expansion no stock out of SLD was experienced at facility level.

Regarding engagement of health service providers, significant advances have been made in developing a strong enabling policy and regulatory environment. A new National Health Insurance (NHI) scheme was launched by the Government of Indonesia in January 2014. TB CARE I-Indonesia collaborated with local partners to ensure that TB services were included in this insurance package. Moreover, in collaboration with the Indonesian Medical Association (IMA) the Project was instrumental in ensuring that International Standards for TB Care (ISTC) were incorporated into the National Medical Practice Standards and National Hospital Accreditation Standards. In order to assure the quality of TB case management by private practitioners, the Project supported IMA to design a TB-certification system and develop technical guidelines for certification. Implementation of the DOTS strategy is now one of the basic requirements for hospital accreditation and provider certification. All these regulations and standards will serve as a basis for quality assurance for TB services and, as such, improve transparency and accountability for reimbursement by health insurance providers in future. Incorporation of TB services into the insurance package is crucial to ensure the financial sustainability of the NTP. The story of Indonesia's success in integrating TB under universal health coverage has been shared internationally, at recent meetings such as the workshop on PPM models for the sustainability of successful TB control initiatives in Washington DC, and the Global PPM Workshop in India.

The Project has also successfully developed and piloted national guidelines with screening algorithms for intensified TB case finding in vulnerable populations, including children and diabetes mellitus and prison populations.

The country's diagnostic network has been much expanded and strengthened: Through TB CARE I, 12 reference laboratories have had infrastructure and equipment upgrades to enable them to meet international standards (BSL-2 plus) and provide quality services. Eight of these laboratories were upgraded and certified as C/DST reference laboratories, including three national reference laboratories that now fully meet international standards and are performing various reference functions including quality assurance,

specialist expertise, and capacity building. Quality assurance for laboratories has been rolled out nationwide.

Innovative technologies have been introduced to improve screening for TB/MDR-TB and decrease diagnostic delays for MDR-TB patients: Indonesia was one of the first high-burden countries to implement GeneXpert MTB/RIF (Xpert) for diagnosis of TB and MDR-TB. Currently 41 Xpert machines are operational through TB CARE I support. Since 2011, when Xpert was introduced, the average time between registration of presumptive MDR-TB cases and second-line treatment initiation has dropped from 81 to only 15 days.

Xpert technology has considerably enhanced screening of drug-resistant TB, drastically boosting the number of rifampicin-resistant TB cases being diagnosed from 216 in 2010 to 1414 in 2014. Moreover the proportion of patients dying between lab request and start of MDR-TB treatment decreased significantly from 11 % in 2012 to 2% in 2014. 21 % of HIV patients tested through Xpert were found positive for MTB and 2.5% were Rif resistant.

Indonesia had one of the fastest growing HIV epidemics in Asia. The estimated prevalence is 0.3% of the general population, increasing from 545.000 in 2011 to 735.000 in 2015. The estimated prevalence of TB among HIV patients is 3% nationally (2013). TB CARE I-Indonesia has focused on improving TB and HIV coordination, including linkages between TB/HIV and PMDT services, and scale-up of Isoniazide Preventive Therapy (IPT) implementation. This has resulted in a steady increase (from 28% to 81%) of all ARV hospitals now implementing DOTS. Intensive case finding (ICF) among PLHIV has significantly improved but is still far from optimal (93% of PLHIV screened for TB and treated accordingly). In contrast, progress of ICF for HIV in TB patients is still slow.

Addressing the gaps in notification as well as in public awareness, expanding quality services for MDR-TB and TB/HIV, and maintaining good treatment results for TB are among the main challenges to be met in the next phase of the USAID program. Yet, all progress made to date—and all strategies designed to address the challenges— must be considered in light of the results of the National TB Prevalence Survey (NTPS) conducted in 2013-2014. TB CARE I investments were essential to achieve a high quality of the survey: Intensive technical assistance during preparation, implementation, and improved quality of laboratories and screening using Xpert contributed to improved case detection compared to earlier surveys, that only applied TB symptom screening and less sensitive sputum smear examination.

The NTPS revealed that the TB burden in Indonesia is considerably higher than (more than double) what was previously estimated. The average prevalence of bacteriological confirmed TB cases is now estimated at around 0.65% of the general population—which equals some 1.6 million TB cases, with 1 million new cases annually. This indicates that

transmission is still very high, and that the gap in notification is even wider than previously assumed. Meanwhile, the prevalence of symptomatic smear-positive TB patients only slightly decreased, from 120 per 100,000 population in 2004, to 111 in 2013. This annual 1% decrease is not enough to effectively cut transmission of tuberculosis in the community.

The NTPS also demonstrated that the capacity of the health system to detect and treat TB patients and the coverage and quality of the TB surveillance system are still inadequate, and that Millennium Development Goal targets for the reduction of TB prevalence and mortality have yet to be achieved.

In the last quarter of 2014, a new strategic plan (NSP, 2015-2019) is being developed with intensive technical support from TB CARE I partners, addressing the changed environment and challenges TB control is now facing. The main priorities will be: addressing the missing cases and the large gap in case notification; improving treatment success in the private sector and in both private and public hospitals; addressing TB in children; improving access to adequately diagnose and treat MDR-TB and TB-HIV; strengthening the surveillance system; ensuring strong political commitment at all levels; and strengthening the infrastructure, human resources and management capacity of the NTP and CSOs.

These priorities, together with the lessons learned during TB CARE I, will define the strategic directions of the national TB control strategy for 2015-2019 and the work plan for Challenge TB, the USAID-funded project following TB CARE I.

## 2. Introduction

The TB CARE I program (2010-2014) was one of the main mechanisms for achieving the **USAID’s global TB control goal and targets by 2015 in selected countries, including Indonesia**. KNCV TB Foundation (KNCV) was the prime contractor for the TB CARE I country project in Indonesia, as in other countries. KNCV implemented this country project in partnership with six other member organizations of the Tuberculosis Coalition for Technical Assistance (TBCTA): the American Thoracic Society (ATS), Family Health International (FHI 360), Japan Anti Tuberculosis Association (JATA), Management Sciences for Health (MSH), International Union Against TB and Lung Diseases (The Union), and the World Health Organization (WHO).

The main purpose of TB CARE I-Indonesia was to provide technical assistance to support the National Tuberculosis Program (NTP) of the Ministry of Health (MoH) of the Republic of Indonesia in achieving the targets of the National Strategy for TB Control 2010-2014, through well-coordinated assistance by TB CARE I-Indonesia partners and facilitation of GFATM-supported activities. This support was complementary to Global Fund Single Stream Funding. Buy in for TB CARE I-Indonesia was USD 35,571,791.

The technical assistance provided by the project was informed by the four overarching elements, or guiding principles, of TB CARE I: **C**ollaboration and coordination, **A**ccess to TB services, **R**esponsible and responsive management, and **E**vidence-based M&E.

Project work plans were prepared annually through full consensus and in close consultation involving all partners. Close collaboration and regular coordination with the NTP and partners avoided overlap in any of the support areas and allowed readjustment of planning based on emerging needs and ongoing monitoring results.

The main approach was to build capacity in selected technical areas, assuring that all technical assistance was complementary to the support provided by other sources, including GFATM. External consultants, where necessary, were brought in to provide technical support in selected areas by training and coaching national technical officers and assisting the NTP in problem solving. This support was realized by both country visits and assistance at a distance.

TB CARE I-Indonesia not only supported the NTP at the national level, but also focused specific support to 10 out of 33 provinces, covering a population of over 155 million, which is around 65% of the total population of Indonesia. These 10 provinces—North Sumatra, West Sumatra, Jakarta, West Java, Central Java, Yogyakarta, East Java, South Sulawesi, Papua and West Papua—were selected based on the priorities of the NTP as described in the National Strategic Plan (NSP) 2010-2014, and on the burden of MDR-TB and TB/HIV, remoteness, and low performance of the NTP in the provinces concerned.

The NSP describes seven detailed strategies essential for Indonesia to achieve the Millennium Development Goals (MDGs) for TB control, and to sharply decrease the disease burden of TB by the end of 2014, through ensuring universal access to quality diagnosis and patient-centered treatment.

In line with the aims of the NSP, the TB CARE I-Indonesia project provided assistance to the NTP in all eight priority technical areas of the TB CARE I program, each with a varied combination of partners involved, as shown in Table 1.

<b>Technical area</b>	<b>Main partners involved</b>
<b>1.</b> Universal and Early Access	KNCV, ATS, FHI 360, WHO
<b>2.</b> Laboratories	KNCV, JATA, FHI 360, WHO
<b>3.</b> Infection Control (also integrated in 1,4 and 5)	KNCV, FHI 360, WHO
<b>4.</b> Programmatic Management of Drug-Resistant Tuberculosis (PMDT)	WHO, KNCV, ATS, FHI 360, The Union
<b>5.</b> TB/HIV scale up	FHI 360, KNCV, WHO
<b>6.</b> Health System Strengthening	WHO, KNCV, MSH,
<b>7.</b> M&E, OR and Surveillance	WHO, FHI 360, KNCV, MSH
<b>8.</b> Drug supply & management	MSH, KNCV, WHO

*Table 1. TB CARE I-Indonesia technical areas and main partners involved*

Section 3 of this report shows the overall performance of the project at a glance, in terms of the core indicators of the global TB CARE I program. Sections 4 to 11 highlight **the “what’s” and “how’s”** of the results achieved in each technical area in turn. Section 12 gives an overview of the support TB CARE I-Indonesia contributed to Global Fund implementation. Section 13 discusses the lessons learned and challenges that still remain to be met, and provides recommendations to guide the way forward for future technical assistance on TB control in Indonesia. The annexes provide the technical outcome indicator matrix and information on the tools and publications developed with TB CARE I-Indonesia support

### 3. Core Indicators

TB CARE I had seven core indicators that the program as a whole worked to improve across all countries. Table 1 summarizes the core indicator results across the life of the TB CARE I-Indonesia project, as well as TB CAP, the precursor to TB CARE I, which our coalition also led.

		<b>C1.</b> Number of cases notified (all forms)	<b>C2.</b> Number of cases notified (new confirmed)	<b>C3.</b> Case Detection rate (all forms)	<b>C4.</b> Number (and percent) of TB cases among healthcare workers	<b>C5.</b> Treatment success rate of confirmed cases	<b>C6.</b> Number of MDR cases diagnosed	<b>C7.</b> Number of MDR cases put on treatment
	<b>2005</b>	254,601	250,155	57%	NA	86%	NA	NA
TB CAP	<b>2006</b>	277,589	273,362	62%	NA	88%	NA	NA
	<b>2007</b>	275,193	271,278	61%	NA	89%	NA	NA
	<b>2008</b>	298,329	292,899	66%	NA	88%	NA	NA
	<b>2009</b>	294,731	289,044	65%	NA	87%	0	20
	<b>2010</b>	302,861	296,272	66%	NA	86%	182	142
	<b>2011</b>	321,308	313,601	70%	NA	85%	383	260
TB CARE I	<b>2012</b>	331,424	322,882	72%	NA	86%	428	426
	<b>2013</b>	327,094	317,618	71%	NA	NA	912	809

*Table 2. TB CARE I core indicator results for Indonesia*

DOTS expansion over the last 10 years, supported by GF, USAID and other partners, has resulted in significant improvement in access to quality DOTS services. This situation has led to a consistently increasing trend in case notification rates for all forms of TB and for new confirmed cases, with the 2012 case notification rate of 135/100,000, which was 100% of the intended NTP target. The same trends were consistently observed in all provinces across the country. The data show that Indonesia is on its way to closing the gap in TB case finding. Treatment success rates have been consistently above the intended target of 85% since 2000, and reached 86% in 2012. There was a slight decrease in treatment performance compared to previous years due to the larger proportion of patients being managed by hospitals. Through the establishment of 26 PMDT referral centers and 698 sub-referral/satellite centers, almost twice as many MDR-TB patients could be enrolled for treatment in 2013 compared to the number registered in 2012. By March 2013, the 1000<sup>th</sup> MDR-TB patient could be enrolled for treatment.

## 4. Universal Access

Universal access to quality, patient-centered health services for every person suffering from TB, is an overarching priority for Indonesia, as enshrined in the MoH's 2011-2014 TB-control strategy, entitled, **"National Strategy to Stop TB: Breakthrough to Universal Access."**

In the first decade of the new millennium, a period of rapid DOTS expansion with support from GFATM, USAID, Dutch Government, CIDA and others, the NTP made significant progress towards this goal. However, progress was limited mainly to the public health sector. DOTS was not yet universally provided in all hospitals; unknown numbers of TB patients were treated by private-sector health practitioners, few of whom were linked, or notifying cases to, the NTP; and major quality issues existed concerning TB diagnosis in vulnerable groups (children, people with diabetes, prisoners, etc.).

Under TB CARE I-Indonesia, ATS, FHI 360, KNCV, MSH and WHO provided technical assistance to support key NTP strategies to expand its efforts to ensure universal access, including: strengthening policies and regulations; scaling up engagement with professional societies; intensifying case finding in vulnerable groups; expanding DOTS implementation in hospitals; introducing a comprehensive Indonesian public-private mix (INA-PPM) model of care; and implementing patient-centered approaches (PCA).

### Key Results

#### Strengthened National Policy and Regulation

- Hospital accreditation

TB CARE I-Indonesia assisted the MoH to incorporate guidelines for medical practice standards for TB and HIV care into the National Hospital Accreditation Standards in 2012. Implementation of the DOTS strategy is now included as one of the requirements for hospital accreditation. TB CARE I-Indonesia also facilitated the development and finalization of an assessment instrument that makes it easier for surveyors to evaluate the status of DOTS implementation in hospitals based on the accreditation standards for TB control. However, despite the fact that TB service standards are now part of the hospital accreditation process, the process does not sufficiently guarantee effective adherence to these national standards: several hospitals that were accredited are **apparently not categorized as "DOTS hospitals"** by the NTP and do not notify to the program.

- National guidelines for medical practice standards for TB care

The MoH, in collaboration with TB CARE I-Indonesia and professional societies, developed and legalized National Guidelines for Medical Practice Standards (Pedoman Nasional Pelayanan Kedokteran – PNPK) for TB care, covering medical and clinical aspects of TB management, based on the ISTC.



*Figure 1. The National Guidelines for Medical Practice Standards for TB Care*

These standards are essential to ensure the standardization and quality of TB care delivered by private providers, and to establish a legal basis and foundation for certification by the Indonesian Medical Association (IMA).

TB CARE I-Indonesia assisted 141 hospitals in 10 supported provinces to develop their Clinical Pathways (*Alur Klinis* – AK) and Clinical Practice Guidelines (PPK) in line with the National Guidelines for Medical Practice Standards (PNPK) for TB. Linking the AK and PPK to the National Health Insurance System (JKN) will enable further expansion of quality-assured universal access for TB to all providers in Indonesia. The standards will serve as a basis for quality assurance for TB services and, as such, improve transparency and accountability for reimbursement by health insurance providers.

- Mandatory notification

An academic review regarding mandatory notification of TB was completed with technical assistance from TB CARE I-Indonesia. The policy recommendations of this review were intended to guide the development of regulations regarding notification. However almost two years since the recommendations were made by JEMM, mandatory notification is not yet in place. The NTP intends to include mandatory notification in the National Guidelines for TB Control, but stronger measures and controls are probably needed to ensure a positive impact.

- National technical guidelines for TB care in the National Health Insurance System (JKN)

The Indonesian National Health Insurance System (JKN) was launched in January 2014. TB CARE I-Indonesia supported the NTP in preparations to ensure incorporation of TB medical care and services in the insurance package. Incorporation of TB into this domestic health-financing scheme under universal health coverage is crucial to sustain the TB control program. The NTP succeeded in inserting technical guidelines for TB patient services in Health Ministry Regulation No. 28/2014, which provides directions for the implementation of the National Health Insurance scheme.

- Revised National Guideline for TB Control (National Manual)

TB CARE I-Indonesia assisted the NTP in the revision of the National Guideline for TB Control to accommodate the latest updates, including the global END TB strategy (post 2015 strategy), revised WHO case definitions, and the JKN scheme, as well as the

updated algorithm for MDR-TB diagnosis, and the revised childhood TB diagnosis algorithm and childhood TB scoring system.

### **Scaled-up Engagement with Professional Societies**

Professional societies have an important role in the NTP. All practicing professionals are required by law to register in and adhere to the rules of their societies. Any standard or regulation endorsed or developed by a professional society applies to its entire membership, and it is the responsibility of the professional society to ensure that all members comply. Professional societies are established at national and branch (province and/or district) levels. Until now, only a minority (<2%) of health professionals in the private sector have adopted national medical practice standards for TB care (PNPK).

TB CARE I-Indonesia supported and collaborated with professional societies in several initiatives, including:

- TB Certification for private general practitioners (GPs) by the Indonesian Medical Association (IMA)

The IMA initiated the development of a TB-certification and reward program designed to improve the quality of TB management by private practicing GPs. Technical guidelines for this program were developed, containing criteria for candidates, certification steps, and rewards offered. The criteria for candidates are completion of TB training and recommendation from the local health office based on TB reporting and quality of DOTS implementation after six months of follow up. Rewards include certificates for branding and extra Continuing Medical Education (CME) credit points that may be used for license renewal. Besides that, the National Health Insurance Provider (BPJS) will prioritize certified providers for contracts, making certification a requirement for any provider managing TB.

TB CARE I-Indonesia also provided support to the NTP for a training of tutors designated for a Distance/Interactive TB Training that private physicians may enroll in to fulfill the training component of the certification criteria.

- Engagement of pulmonologists in PPM activities in six provinces

Since 2010, TB CARE I-Indonesia, through ATS, has engaged pulmonologists associated with the Indonesian pulmonologist association (PDPI), linking them effectively with the offices of the local health services for notification of TB patients. This initiative has gradually expanded through the years, and has now recruited 97 pulmonologists from 61 private hospitals in DKI Jakarta and its borderline districts in West Java and Banten provinces. Up to the end of September 2014, PDPI members had managed and notified more than 12,500 TB cases to the local health offices, accounting for about 11% of all TB cases in DKI Jakarta in 2013.

With support from GF, PDPI scaled up the project to four other districts in four provinces (North Sumatra, West Java, Central Java, and East Java). TB CARE I-Indonesia supported this expansion by developing project technical guidance, and assisting in

planning and implementing training. This model of specialist engagement with the TB program has won increasing recognition as a model that can be adopted by other medical professional societies, such as the Indonesian Pediatric Society (IDAI) and the Association for Internists (PAPDI).

### **Intensified Case Finding in Vulnerable Groups**

The longstanding strategy of passive-promotive case finding in Indonesia (passive case finding with active health promotion) is insufficient to capture all estimated TB cases. Therefore, active case-finding approaches must be initiated and implemented rapidly. To be efficient with limited resources, active case finding must be focused on prioritized high-risk groups. During Year 4 of the program, TB CARE I-Indonesia conducted several activities in this regard.

- Tuberculosis-diabetes mellitus (TB-DM)

Prevalence of diabetes mellitus (DM) in Indonesia among people over 15 years has increased from 5.7% in 2007 to almost 6,9 % (Risksdas 2013), with 70% of DM patients remaining untreated. Collaboration between the national TB and DM programs is a priority since diabetes is a major risk factor associated with both active TB and poor TB treatment outcomes. TB CARE I-Indonesia supported both the TB and the Diabetes programs under the Directorate General of Disease Control (DitJen P2), to design algorithms and tools for TB screening among DM patients and DM screening among TB patients in referral healthcare facilities. These algorithms are currently being piloted in three provinces (North Sumatra, South Sulawesi, and Central Java) with technical assistance from TB CARE I-Indonesia. Questionnaires/interviews for patients and hospital staffs have been used to probe implementation difficulties. The results of this pilot will be used to further develop the TB-DM collaboration program under Challenge TB.

- Childhood-TB case finding

The burden of childhood TB in Indonesia represents the current high level of TB transmission in the general population. Childhood tuberculosis remains largely underestimated due to under-reporting in general, and possibly, to the low level of suspicion by practitioners regarding tuberculosis disease in children. TB CARE I-Indonesia has provided technical support to revise national guidelines and training materials, and develop a protocol and plan to implement the use of Xpert to diagnose TB in children.

Starting in 2012, TB CARE I-Indonesia also assisted in piloting intensified childhood TB case finding in five provinces (North Sumatra, Central Java, East Java, NTB, and East Kalimantan), and expanded this to 14 provinces in 2013-2014. To overcome the under-reporting of childhood TB, TB CARE I-Indonesia assisted the NTP to incorporate childhood TB components into the revised reporting and recording frameworks (TB 01, TB 05, TB 06, and TB 03). However, although the number of provinces implementing

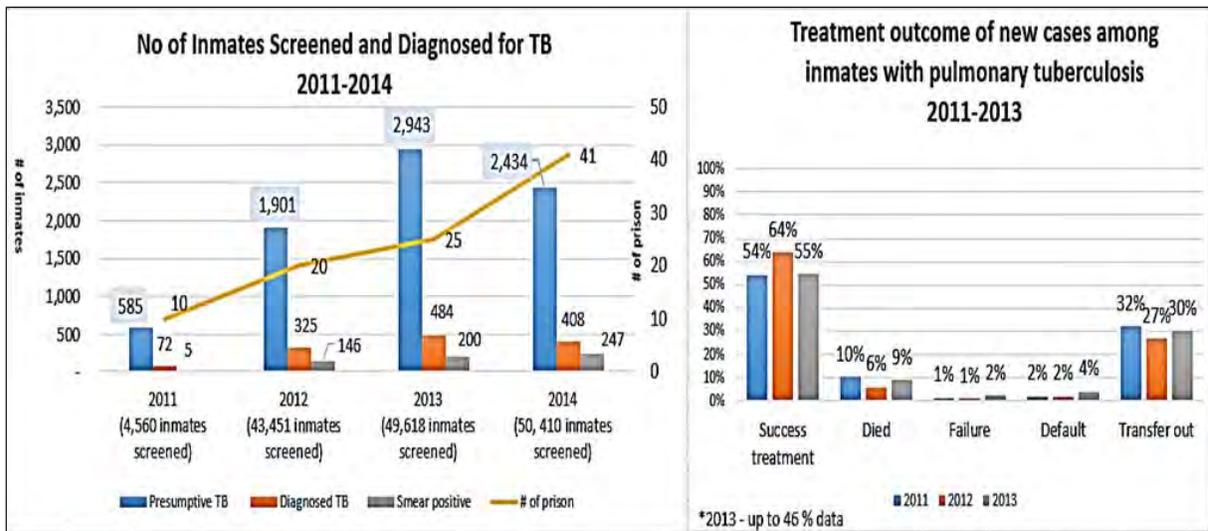
childhood TB case finding increased, the numbers of pediatric TB cases notified have been stagnating or decreasing due to a combination of reduction in over-diagnosis and persistent under-reporting in district-level hospitals.

During the Global Consultation on Childhood TB workshop in September 2014 in Jakarta, a one-year plan on childhood TB was drafted to serve as the basis for a national action plan (2015-2019). Highlights of the plan include the development of childhood-TB training modules, scale-up of contact investigation, use of IPT for children, and integration of TB screening in mother and child health (MCH) services and child nutrition programs.

- TB services in prisons

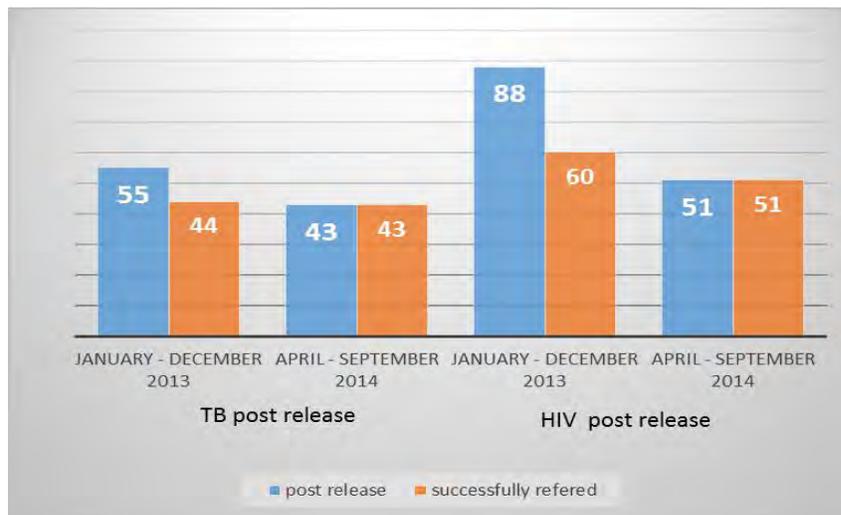
TB CARE I-Indonesia collaborated closely with the Directorate General of Corrections to support 41 mostly larger prisons/detention centers (DCs) that were prioritized in eight provinces. These include: North Sumatra (4), West Sumatra (3), DKI Jakarta (6), West Java (7), Central Java (4), East Java (5), DI Yogyakarta (7) and South Sulawesi (5). The baseline of 10 prisons/DCs in 2010 was scaled up to 41 in 2014. Even though this covers only 9% of all the prisons/DCs in Indonesia (41 of 463), the total inmate population covered by TB CARE I support is more than 25% of all inmates in the country (40,348 of 159,189 inmates as of September 2014). Nationwide, 218 out of 463 prisons are now implementing DOTS. All 41 priority prisons/DCs are also implementing TB-HIV collaborative activities, TB Infection Control and PMDT, and have full access to Xpert screening for both presumptive MDR-TB and presumptive TB in HIV patients.

A total of 50,410 inmates from these 41 prisons/DCs were screened in 2014, of whom 2,434 were presumptive TB and examined by sputum microscopy, resulting in 408 (17%) inmate patients diagnosed with TB and put on treatment. Of these 408 TB cases, 247 were sputum-smear positive (SS+). More details regarding the TB diagnosis and treatment results are given in the graphs below.



Graph 1. TB case notification and treatment outcomes in supported prisons, 2011-2014 (Q3)

As part of our strategy to promote TB-HIV collaboration in **DKI Jakarta’s prisons/DCs**, TB CARE I-Indonesia worked through HIV-related civil society organizations (CSOs), in particular through the Partisan Foundation up to December 2013. Since April 2014, support for this work has been taken over by Global Fund under the MoH. The Partisan Foundation was mainly responsible for peer support groups, regular education about TB and HIV, and pre- and post-release activities for inmates with TB and HIV. They also supported prisons/DCs in annual TB mass screening and sputum transportation. Below are post-release results (TB and also HIV patients that are referred for post-release services) from the periods of January to December 2013 and April to September 2014 from six prisons/DCs in DKI Jakarta.



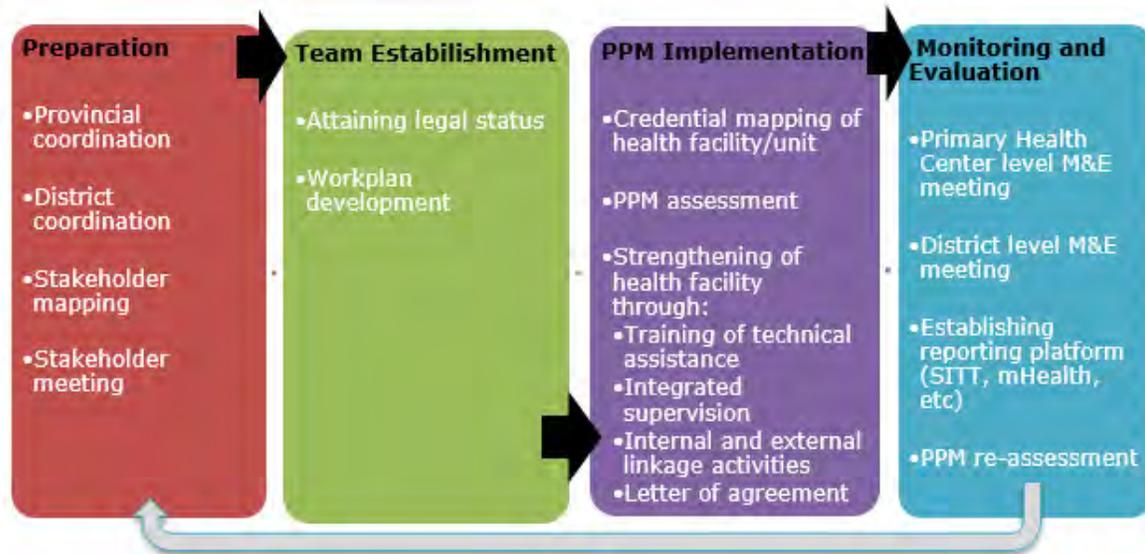
*Graph 2. Post-release results among transferred out inmates at six prisons/DCs, DKI Jakarta, 2013-2014*

Based on lessons learned from the 2010-2014 period, the Directorate General of Corrections, in collaboration with the NTP, NAP and TB CARE I-Indonesia, has started updating the National Strategy on TB and HIV Control in Prisons and developed several tools for prisons and detention centers. These include TB and TB-HIV Quarterly Report forms, TB-IC Guidelines and SOPs, self-assessment tools for TB IC in Prisons (updated for the FAST strategy), PMDT guidelines, and a Circular Letter on the Implementation of TB IC in Prisons and Detention Centers,

### **Introduction of the Comprehensive INA-PPM Model**

In 2011, the NTP introduced INA-PPM, a comprehensive public-private mix model of TB care for Indonesia that consists of six key “pillars,” each representing a priority-intervention category (DOTS, hospitals, private sector, drug supply, diagnostic services, and community support). This model offers a comprehensive approach that underlines the importance of integrating interventions and mainstreaming PPM into all other strategies. TB CARE I-Indonesia supported the implementation of this model in all 10

program-supported provinces. Considering the decentralization of the governance system in Indonesia to district/municipal level, it was agreed that the PPM strategy would be best implemented at district level.



*Figure 2. Approach of the PPM strategy at district / municipal Level*

Best practices were documented and further developed into the PPM Operational Guideline, which covers steps to be taken, stakeholders to be involved, and tools to be used throughout implementation (from planning to M&E). To date, 35 districts have implemented PPM with technical support from TB CARE I-Indonesia. PPM implementation at the district level has shown positive results, particularly in terms of stakeholder engagement. As a result, provincial health offices in three provinces have decided to adopt and replicate this model in 19 other districts in their areas using local funding. Moreover, 6 of the 35 PPM districts have successfully secured financial support from their local governments, in addition to the support provided by TB CARE I-Indonesia.

We documented several good practices during the implementation of the PPM model at district level, such as:

- Evidence seeking: Review of private doctor prescriptions by 23 pharmacist members of the Indonesian Pharmacist Association (IAI) in Cirebon district, West Java. Data were collected from January to June 2013, with a total of 930 prescriptions from 99 private GPs. Based on these data only 5% of prescriptions met the national standard for treatment. This result was presented at a stakeholder meeting, in response to which IMA conducted a series of trainings, targeting not only providers in the activity catchment area but in the entire cluster of districts where the pilot was conducted. Repeat prescription reviews were conducted for 826 prescriptions during the next semester (July to December 2013), and for a larger sampling of 1824 prescriptions within the next year, which showed 53% and 27% compliance

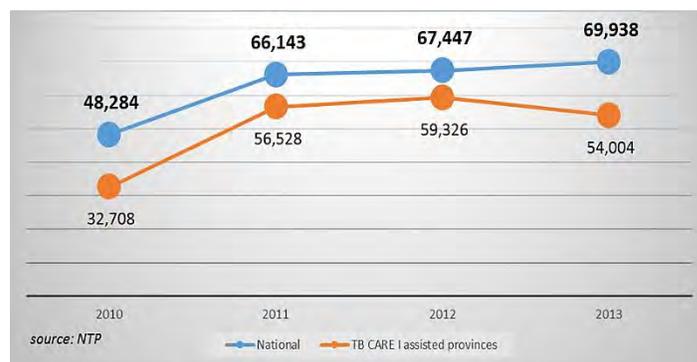
with the standard of treatment, respectively. Such improvements suggest the potential usefulness of the prescription review activity to improve quality of TB treatment among private providers.

- Directory of qualified TB service providers in West Sumatra (inventory of contact information for quality assured PPM network). In 2011, the PPM team in Padang developed a PPM directory for TB consisting of quality assured providers (who are following national clinical standards for TB) including their mobile phone numbers, contact information at health facilities, District TB Officers, PPM teams and other partners. The directory was printed and distributed to all health facilities and PPM teams. This provided them with access to a referral and consultation network, allowing more successful case referral and tracing. The distribution of the book resulted in an increase in referral success rates of seven large hospitals in this province, from an average of 63.5% in 2011 to 83.5% in 2013.
- Paguyuban/CSO Adimas TB. This small-scale community-based initiative was established in Kalikotes Sub-district in Klaten District to support local health services with TB control by providing IEC materials, implementing active case finding and tool development (questionnaires), and promoting TB testing and treatment adherence. In 2012, Adimas TB presented its success story about increasing active case finding and its contribution to TB control to the district government. This success story triggered the local government to replicate and fund similar activities in its other 26 sub-districts.

From December 2013 to January 2014, Adimas TB organized case finding competitions for its members and health cadres in seven villages. This yielded 130 presumptive TB cases, with 13 positive smear TB cases. Another good practice from Adimas is its contribution to active case finding using its own resources, by doing door-to-door screening using a simple questionnaire. Based on the 5,778 questionnaires 311 presumptive TB cases were identified, three of whom were confirmed and put on TB treatment.

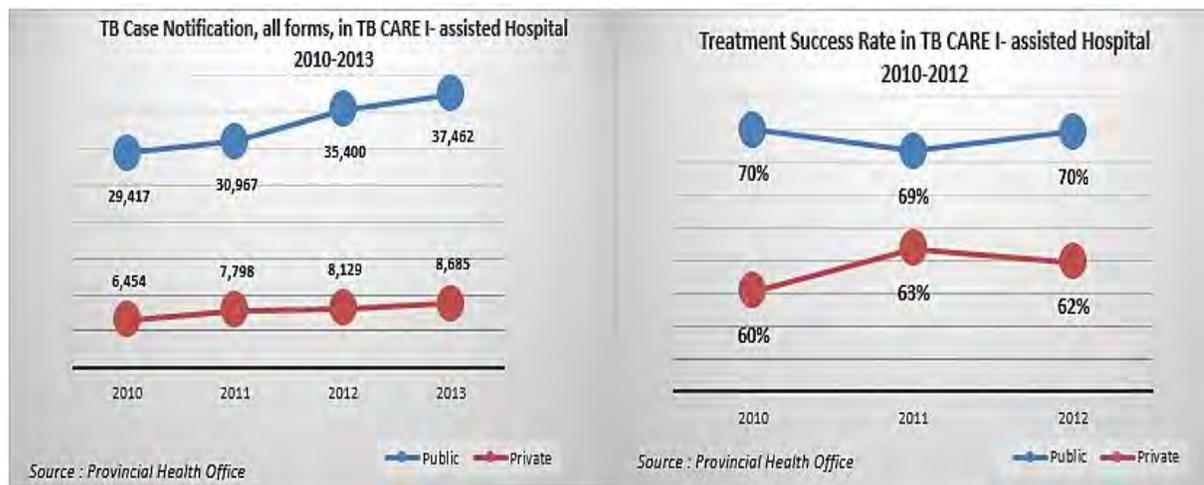
### Hospital Implementation of DOTS

TB CARE I-Indonesia continued efforts started during TB CAP to expand Hospital DOTS Linkages. TB CARE I technical officers provided technical assistance in the form of mentoring, supervision, and on-the-job training to public and private hospitals to ensure the quality of DOTS implementation and facilitate the linkage of hospitals with health centers and district and provincial health services. The number of hospitals implementing good quality DOTS



Graph 3. TB case notification, all forms, in hospitals 2010-2014

through various TB CARE I technical assistance activities (covering 361 general hospitals) increased from 127 in 2011 to 265 in 2014. The number of TB patients notified by hospitals in TB CARE I project-supported areas increased from 32,708 in 2010 to 54,004 in 2013 (Graph 3). This accounted for 77% of TB cases notification from hospitals nationwide. The treatment success rate in assisted private hospitals in project-supported provinces increased from 60% in 2010 to 62% in 2012 (Graph 4). Also, the number of hospitals providing HIV/ART and DOTS services increased from 92 in 2012 to 262 in 2014.



Graph 4. TB Case Notification, all forms, in TB CARE I-assisted hospitals 2010-2013 and Treatment Success Rate in TB CARE I- assisted hospitals 2010-2012

### Tools to Support Patient-Centered Approaches (PCA)

From 2012 to 2013, TB CARE I-Indonesia piloted three tools from the TB CARE I's PCA package in Cimahi City and Bandung District—namely the Patient's Charter (PCTC), QUOTE TB Light, and Tool to Estimate Patient Costs. Results from the pilot showed that:

- Patients and providers were empowered with knowledge of rights and responsibilities. PCTC was (re)introduced and discussed during workshops between patients and providers. Illustrated versions of the PCTC, which were produced and disseminated to public health facilities (Puskesmas), and PCTC banners, which were placed in the waiting rooms, proved to be empowering tools in the sense that they opened dialogue between the patients and providers. Both patients and providers also learned (for the first time) that TB patients have rights and responsibilities. By the end of the pilot, awareness of the Charter among TB patients had increased from 3.2% to 32.1%.

- Through QUOTE TB Light, providers became more aware of patients' perceptions of services and their difficulties in accessing them as important dimensions of quality services. The three most important quality dimensions identified by patients were affordability, provider availability, communication and information. This was also an empowering experience for providers and district health officers as they became more aware of the need to become patient centered. As a result, some changes were implemented, such as improving patient education and information, by spending more time to discuss health issues with patients.



*Figure 3. Group Discussion with patients on quality of TB services at Health Center (Implementation of PCA tools)*

- District TB staff and health care workers (HCW) also became aware of the challenges faced by patients when accessing TB services, specifically in terms of transport costs and loss of income. These are also among the main reasons why patients drop out before their treatment is completed. This finding is in line with results from OR using the Tool to Estimate Patient Costs. This study found that on average, TB patients incurred direct costs of IDR 1.3 million and indirect costs (transport and loss of income) of IDR 2.2 IDR during the time they received TB care.

The results of the PCA pilot were shared with the NTP and plans have been made to scale up this PCA approach to other parts of the country. In 2014, TB CARE I-Indonesia, in collaboration with the NTP and CSOs, developed PCA SOPs specific to the Indonesian context, which include guidance on scaling up the use of the four PCA tools and defining roles for tool implementation and monitoring.

## 5. Laboratories

Limitations in quality assurance and infrastructure of laboratory services, along with lack of effective communications among laboratories and health service providers, present a great challenge across the Indonesian health sector. Therefore, further strengthening of laboratory capacity and performance is a crucial prerequisite to quality TB screening and diagnosis, and as such, was a priority for TB CARE I in Indonesia.

The key goal of this technical area in TB CARE I was to assure quality diagnosis of TB through the establishment of a sustainable, national network of quality-assured laboratories for TB culture (C) and drug-susceptibility testing (DST), and the introduction of innovative technologies (rapid molecular-based tests) to enhance the screening of all MDR-TB suspects and increase TB case finding among children and people living with HIV (PLHIV). The purposes of the certified laboratory system are to support diagnosis of drug-susceptible and drug-resistant (MDR/XDR) TB cases, ensuring their effective referral and treatment follow-up, as well as to support national drug resistance surveillance and TB prevalence surveys.

TB CARE I-Indonesia's main approach was to continue the close collaboration established under TB CAP between relevant departments in the Indonesian MoH and National TB Reference Laboratories (NRL), as well as the Supranational TB Reference Laboratory (SRL) at SA Pathology (Adelaide-SRL), while building more effective partnerships with Global Fund, JSI and other key implementers.

KNCV and three coalition partners—FHI 360, JATA, WHO—worked on the laboratory strengthening technical area. Experts from TB CARE I and Adelaide-SRL provided intensive technical assistance, functioning as mentors to local laboratory professionals responsible for on-site technical supervision, including promotion of safe practices. Additionally, the SRL provided regular external quality assessment for the newly established reference laboratories.

### Key Results

#### Improved Laboratory Capacity and Performance

- Directorate of Laboratory Services (BPPM) reinforced

All deliverables in this technical area were focused on boosting the capacity of existing institutions and facilities, starting with the **MoH's Directorate of Laboratory Services (BPPM)**, aiming to reinforce its national leadership. While in the past TB laboratory strengthening was mainly done by the NTP, the BPPM has increasingly taken up this responsibility, providing technical directions to TB laboratory services at national and decentralized levels.

Additionally, technical assistance was provided to build the capacity of the MoH to draft the National Plan for Laboratory Network Development (2010-2014), the National Laboratory Standard Operating Guidelines and Standard Operating Procedures to be in line with international standards.

- Three National Reference Laboratories (NRLs) established and accredited

Three existing well-qualified laboratories were upgraded to become national reference laboratories (NRLs) with TB CARE I support, now meeting international standards in performing national referral functions. These functions include quality assurance, specialist expertise, problem solving, capacity building, and advocacy. In 2011 the Minister of Health designated the NRLs formally through Ministerial Decree no.1909/MENKES/SK/IX/2011. The three NRLs are:

1. BLK Bandung, as the NRL for microscopy
2. BBLK Surabaya, as the NRL for culture/DST
3. Microbiology Laboratory of the University of Indonesia (UI) as the NRL for molecular technology and research.

The three NRLs are now fully operational, ensuring technical leadership, staff development and technical guidance at the national level. BBLK Surabaya has successfully taken over the role of SRL Adelaide in the preparation, sending, evaluation and reporting of culture/DST EQA panels for all DST laboratories in Indonesia. It also recently started training laboratory technicians from across the archipelago (18 staff in 2014) and has been conducting on-site assessments and training at decentralized sites. BLK Bandung implemented five batches of train-the-trainer courses for staff capacity development in the provinces. The UI Microbiology Lab in Jakarta is responsible for capacity building in molecular technologies, including Xpert and Line Probe Assays, and is planning to implement DNA sequence analysis for the detection of mutation(s) associated with resistance to anti-TB drugs. All three NRLs also deliver diagnostic services for hospitals managing TB and MDR-TB patients, however continued technical assistance still required.

- Expanded and enhanced national laboratory network

The establishment of the three NRLs resulted in major improvements to the national laboratory network, and by extension, to the whole health system:

- The NRLs have supported BPPM in the development of regulations, standardization, guidelines, SOPs and diagnostic algorithms. They have also assisted with endorsement and implementation through human resources development and supervision.
- The NRLs have supported the expansion of the network of regional reference laboratories for culture/DST and intermediate laboratories for microscopy. Provincial reference microscopy laboratories have been established in seven new provinces, and 15 reference laboratories have gained adequate skills to package and transfer TB specimens to the culture/DST reference laboratories.

- Nationwide expansion of external quality assurance (EQA) for smear microscopy using the lot quality assurance sampling (LQAS) method has been achieved. By 2014, all 33 provinces started to implement LQAS. Coverage of EQA for smear microscopy in project-supported areas increased from 42% to 56% (2011-2013), and acceptable levels of EQA performance increased from 58% to 66% (2011-2013).
- The NRLs fully assist in monitoring and evaluation of TB program impact: The expanded laboratory network, with increased capacity and quality-assured culture and molecular testing, was far more sensitive in the 2013-14 prevalence survey than in past surveys, allowing for detection of sputum smear negative (SS-) TB cases. This is one of the main reasons why current TB prevalence estimates are much higher than they were in 2004 (preliminary findings of the TB prevalence survey 2013-14).
- Forty-one laboratory sites with Xpert are able to rapidly and accurately detect rifampicin-resistant TB and are linked with PMDT centers that manage patients in a timely manner. TB CARE I-Indonesia also assisted a Training of Trainers for Xpert use in the TB Reach private sector project in Jakarta.
- The maturing laboratory network enables the NTP to initiate the implementation of a nationwide sentinel system for drug resistance surveillance, which will provide the MoH with crucial information on TB control performance, and allow for reliable, **“real-time”** estimation of national-level drug resistance to inform short- and long-term planning (work in progress). TB CARE I-Indonesia assisted the NTP in planning and preparing the National Drug Resistance Survey to be implemented in 2015. The protocol will be based on Whole Genome Sequencing.
- Improved laboratory infrastructure with upgraded equipment

Through TB CARE I, 12 reference laboratories have had infrastructure and equipment upgrades, to enable them to meet international standards (BSL-2 plus) and provide quality services. This is essential for the NTP to be able to expand control of MDR-TB (PMDT), conduct drug resistance surveillance, and support implementation of national prevalence surveys. The 12 laboratories are BLK Semarang, BLK Jayapura, Gadjah Mada University (UGM) Microbiology Lab, BBLK Jakarta, Adam Malik Hospital, BBLK Palembang, BLK Bandung, M Jamil Hospital in Padang, Sanglah Hospital in Bali, UI Microbiology Lab, BLK Samarinda and BBLK Surabaya.



Figure 4. NRL BBLK Surabaya before and after renovation with TB CARE I-Indonesia support (Roni Chandra)

- Increased capacity for TB drug susceptibility testing

Eight reference laboratories are now certified for culture/DST and are quality assured by the Supranational TB Reference Laboratory (SRL), IMVS/SA Pathology. These laboratories are NRL BBLK Surabaya, UI Microbiology Lab, Persahabatan Hospital, BLK Bandung, University of Hasanuddin (Unhas) NHCR Lab, BLK Semarang, BLK Jayapura, and BBLK Jakarta. Three reference laboratories are in the pipeline for certification, currently undergoing the process of EOA for DST and have already passed the first panel—Adam Malik Hospital, BBLK Palembang and UGM Microbiology Lab. Five other laboratories—BLK Banjarmasin, BLK Samarinda, Sanglah Hospital, M. Jamil Hospital and Rotinsulu Hospital—are in the process of preparation for certification.

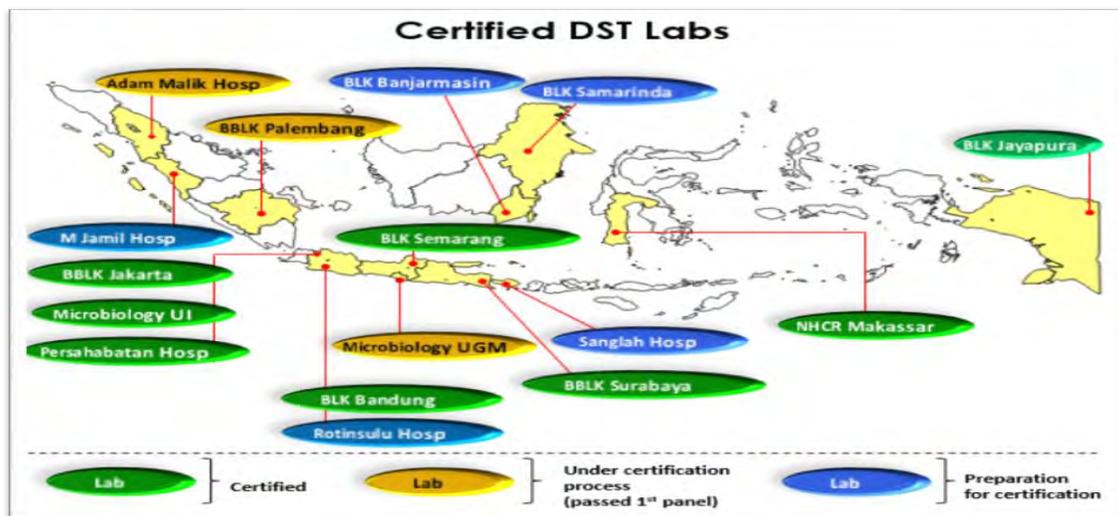


Figure 5. Mapping of certified DST laboratories in Indonesia as of November 2014

- Optimized functioning of biological safety cabinets (BSCs)

Biological safety cabinets (BSCs) are among the most critical pieces of equipment to protect technicians in TB laboratories. Therefore, maintenance and calibration are crucial to ensure this equipment functions well. With project support, 11 BSCs are being successfully recalibrated annually in the following six laboratories: UI Microbiology Laboratory, BLK Bandung, Persahabatan Hospital, BBLK Jakarta, UGM Microbiology Lab and BLK Jayapura.

- Improved TB culture capacity for conducting the National TB Prevalence Survey (NTPS)

For the first time, quality-assured TB culture was used during implementation of the NTPS. Seven reference laboratories provided these services through TB CARE I support: BBLK Surabaya, Adam Malik Hospital, BBLK Palembang, BBLK Jakarta, BLK Bandung, BLK Semarang, BLK Jayapura. Approximately 80,000 specimens were tested.

- Enhanced safety for laboratory workers

Country-specific training packages for Safe Working Practices and specimen handling were developed. This was done in response to the recognition that laboratory staff were not following basic and safe laboratory practices, placing workers at high risk of TB infection, and patients at risk of incorrect results. Forty-nine TB laboratory technicians/staff from 27 culture/DST laboratories are now trained in safe working practices for TB culture. Additionally, a video package on how to safely transfer TB specimens was developed and distributed to relevant laboratories to improve specimen referral from health facilities to Xpert sites and culture/DST reference laboratories.



*Figure 6. Safe Working Practices Training (Roni Chandra)*

## **Innovative Technology Introduced**

Innovative technologies were introduced to improve screening for TB/MDR-TB and decrease the diagnostic delay for MDR-TB patients. Indonesia was one of the first high-burden countries (HBCs) to start rapid implementation of Xpert as a new diagnostic test

to diagnose TB and rifampicin (RIF) resistance. Support from TB CARE I-Indonesia consisted of technical assistance in planning and preparation, technical guidelines including diagnostic algorithms, support for procurement, trainings, supervision, monitoring and evaluation, and other aspects of implementation including trouble shooting.

In June 2011, a national stakeholders meeting was organized, a Country GeneXpert Advisory Team (C-GAT) was established, and an Xpert Rapid Implementation Plan was drafted. Diagnostic and clinical algorithms were developed, preliminary sites selected and timelines determined. Seventeen Xpert machines and 1,700 cartridges were ordered through TB CARE I-Indonesia and arrived in the country in September 2011 through the Special Access Scheme. In October 2011, Xpert training materials were finalized and laboratory and clinical experts were trained (Training of Trainers).

The Plan for Rapid Implementation of Xpert was carried out in 2012-2013, and guidelines and diagnostic algorithms for Xpert were developed to address rapid expansion, maintain standardized usage and maximize effectiveness of the new diagnostic test. In 2013 a comprehensive lessons learned document on Rapid Implementation of GeneXpert was developed by an external consultant as a basis for future planning for expansion.

TB CARE I-Indonesia also provided technical support for the implementation of Xpert machines procured under GF ATM, so 24 additional Xpert MTB/RIF machines were installed and became operational during 2014. Thus, as of September 2014, a total of 41 Xpert machines have been installed at PMDT sites across the archipelago and are fully operational to support the nationwide expansion of PMDT. The National TB Lab expansion plan, which was closely integrated with the PMDT expansion plan, was approved by GF for SSF phase 2. The budget covers funding for additional Xpert sites as well as TB lab expansions of 17 C/DST labs by 2015: the procurement of 42 additional Xpert machines is now in process.

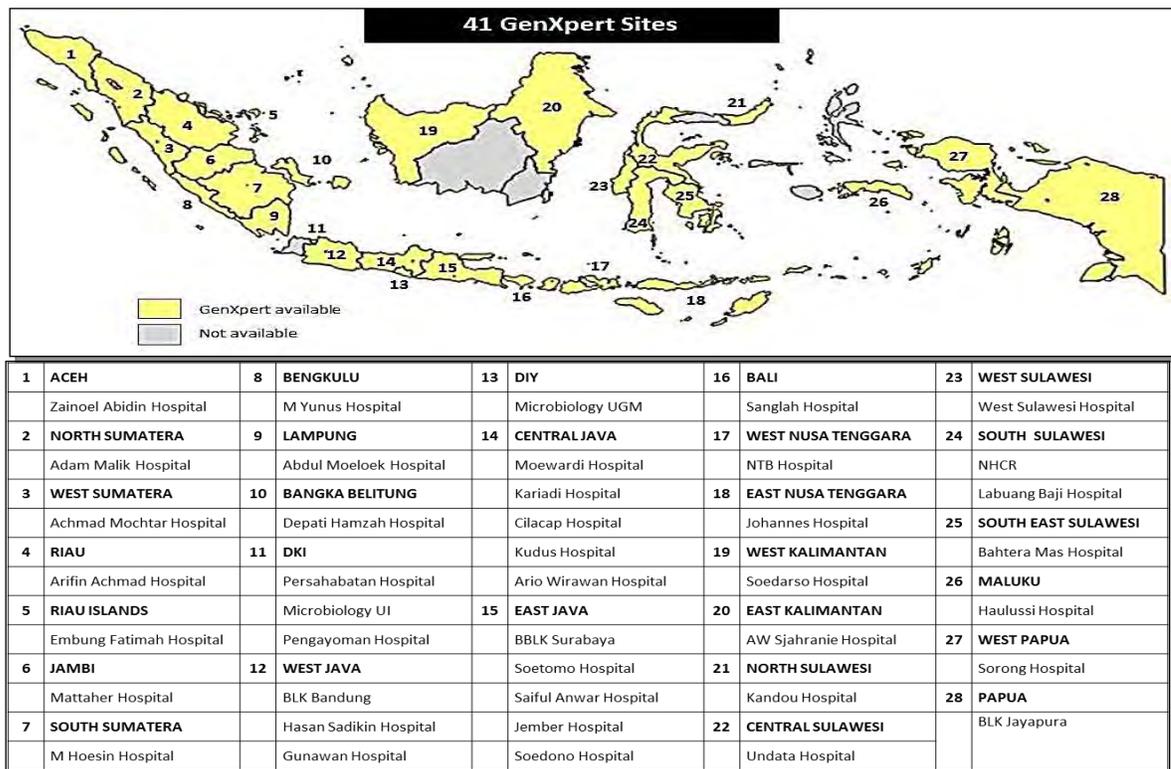


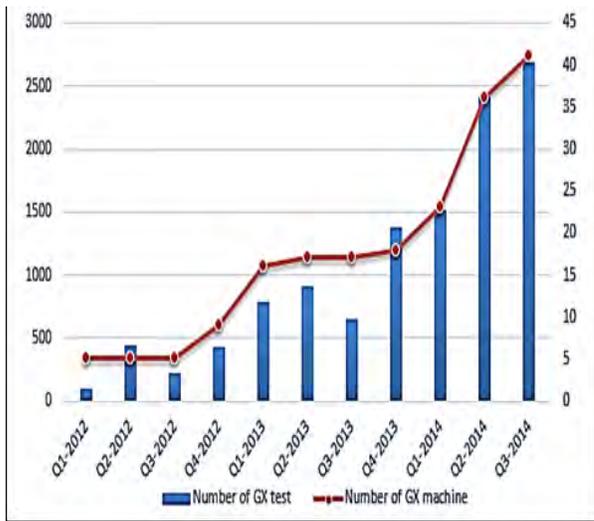
Figure 7. Mapping of 41 Xpert sites

## Xpert Implementation Results

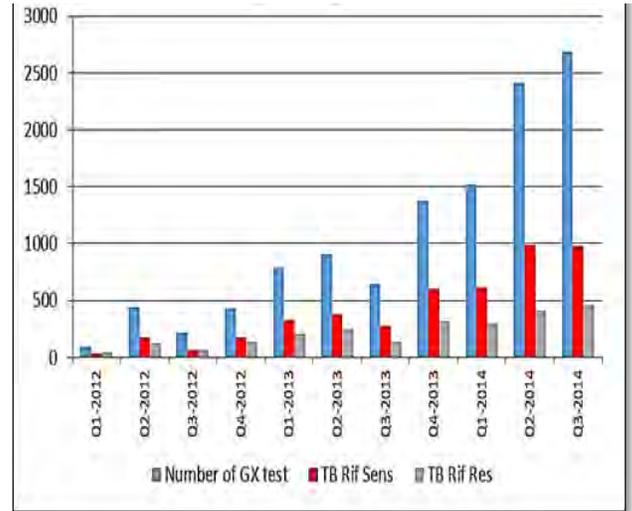
In Indonesia quality-assured TB culture and molecular technologies such as Xpert are increasingly being used as diagnostic tools. This has resulted in an increased number of MDR-TB cases being correctly diagnosed. Lessons learned show that Xpert is crucial to achieve national PMDT and HIV/TB expansion targets. This innovative technology is now well accepted and fully integrated into the routine diagnostic algorithm. Improved capacity of the laboratory network and decentralization of quality-assured laboratory services to more provinces have also improved access to TB diagnosis.

- Enhanced screening of MDR-TB

Screenings of presumptive MDR-TB and HIV patients through Xpert were conducted in 41 sites, with a total number of 15,996 tests. After the introduction of Xpert, the number of presumptive MDR-TB cases tested increased significantly. From March 2012 to September 2014, a total of 9,473 tests for presumptive MDR-TB were done, of which 2,105 (22.2%) were Rif resistant and 3,836 (40.5%) were Rif sensitive/susceptible TB. Through rapid diagnosis MDR-TB patients can be treated earlier so mortality can be prevented and morbidity can be reduced. Before the introduction of Xpert patients had to wait four months or longer for conventional C/DST results to be released.



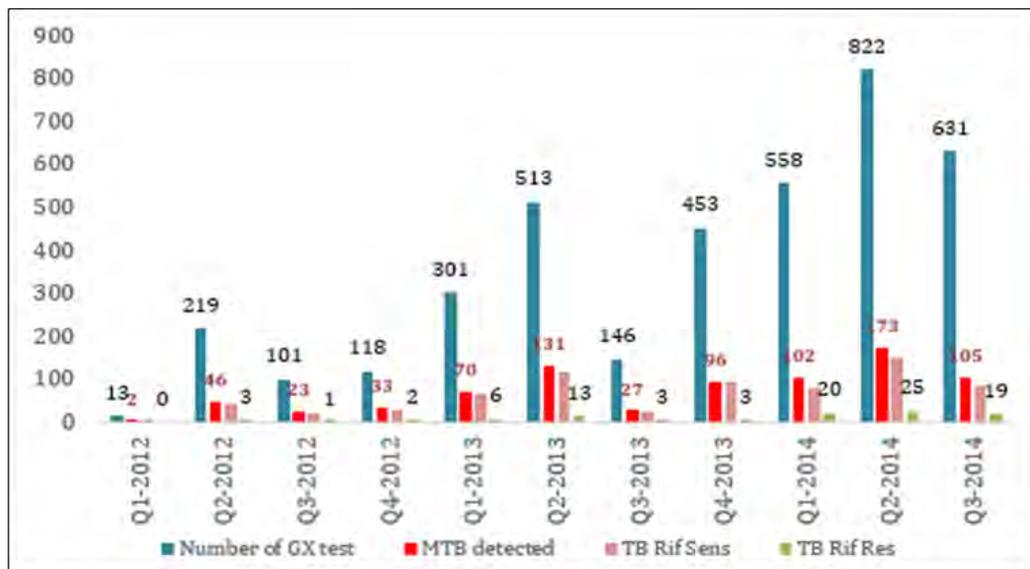
Graph 5. Functional Xpert machines and testing data, 2012-2014



Graph 6. Results of screening for MDR-TB, 2012-2014

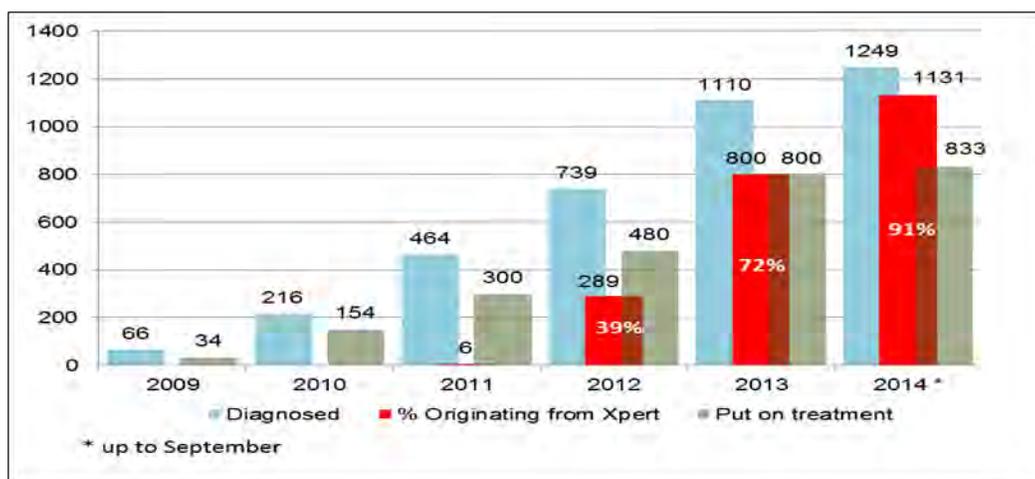
- Enhanced screening for TB in HIV patients

The Xpert technology also allows the TB and HIV programs to better identify TB in HIV patients. These forms of disease are notoriously difficult to diagnose with certainty. The contribution from Xpert and culture to the diagnosis of these cases is significant: Indonesian data show that for HIV patients, Xpert has a diagnostic yield of 10% more TB patients compared to smear microscopy. From March 2012 to September 2014, a total of 3,875 tests were done on HIV patients, of which 808 (20.8%) were MTB positive of which 95 (13%) were Rif resistant (Graph 7).



Graph 7. Results of Xpert testing in PLHIV, Q1 2012- Q3 2014

The introduction of Xpert technology has considerably enhanced screening of drug-resistant TB: over recent years the number of diagnosed rifampicin-resistant TB cases has increased drastically and the proportion of patients diagnosed through Xpert has grown substantially (see Graph 8).



*Graph 8. Number of MDR-TB patients in Indonesia diagnosed and put on treatment (2009-2014) and the proportion of all MDR-TB cases diagnosed via Xpert*

The introduction of Xpert has also considerably reduced diagnostic delays for MDR-TB patients: the number of patients put on treatment within seven days after diagnosis increased from 2% in 2013 to 18% by only the first quarter of 2014. As a result, the high mortality of MDR-TB patients could significantly be reduced, from 8.3% (2009-2012) to 1.5% (Q3, 2014) by shortening the diagnostic delay from an average of 81 days before Xpert introduction (max. 372 days) to 15 days after Xpert introduction.

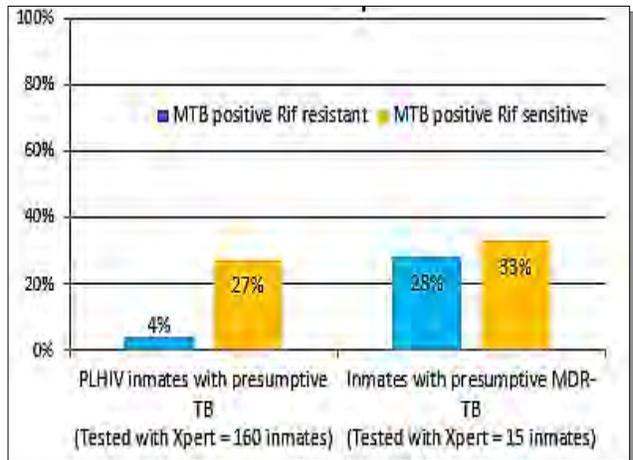
The improved capacity of laboratory services (now eight laboratories with DST capacity and another three in progress) to diagnose resistance to first- and second-line anti-TB drugs more reliably and quickly allows adjustment of treatment regimens—to more **“individualized” treatment**—in patients with drug-resistant TB.

The improved and expanded capacity of laboratory services also enabled the national program to detect the emergence of quinolone resistance in MDR-TB cases. Data from four laboratories demonstrated that the prevalence of quinolone resistance in such cases was variable but significant. The high levels of quinolone resistance (>20%) represented a real threat to TB control and had important implications for the management of drug resistance in Indonesia. Now that the threat has been identified, the NTP can redirect its strategies.

### **TB and HIV Laboratories in and for Prisons**

During the course of TB CARE I-Indonesia, 70 volunteer health officers and inmates (28 male, 42 female) from 30 prisons/DCs and Pengayoman Hospital were trained in TB and HIV laboratory strengthening. By 2014, 5 of the 41 prisons/DCs and 1 prison hospital (Pengayoman Hospital in DKI Jakarta) supported by the program had started functioning as independent laboratories for microscopy examination; and 20 prison/DC laboratories were able to perform sputum fixation. Fourteen of the 41 prisons/DCs were performing HIV examinations among inmates, using rapid testing for HIV diagnosis. Prisons that have limited laboratory capacity collaborate with nearby public health centers or hospitals to conduct TB or HIV tests.

In March 2013, an Xpert machine was installed in Pengayoman Hospital for the diagnosis of TB among PLHIV inmates. Later, it was also used for diagnosis of MDR-TB suspects found in prisons/DCs in the Jabodetabek (Greater Jakarta) area. Another Xpert was installed in Cilacap Hospital, Central Java, which is mainly used for diagnosis of TB and MDR-TB among inmates from Nusa Kambangan, a high-security prisons complex. The results of Xpert MTB/Rif in Pengayoman Hospital are shown in Graph 9)



*Graph 9. Xpert utilization in a prison hospital (Pengayoman Hospital) from initial implementation to the end of TB CARE I-Indonesia*

## 6. TB Infection Control

While TB CAP Indonesia focused on developing a national policy on TB-IC, tools for TB-IC assessment, and a trainers pool, the TB CARE I project made efforts to address the challenges related to implementation, in particular the low awareness and commitment of health managers in hospitals, lung clinics, and health centers to implement TB-IC.

The first step in TB CARE I was to finalize and disseminate the national TB-IC guidelines for health facilities and for congregate settings such as prisons and detention centers (2011). The next step was to develop blueprints and standards for engineering design for inclusion in existing infection control guidelines.



*Figure 8. TemPO guideline book and posters developed with TB CARE I-Indonesia support and assistance*

The main achievement during TB CARE I was the backing of infection control standards by a broader regulatory and policy framework, i.e., including TB-IC standards in accreditation standards for health facilities. Furthermore TB CARE I assisted the NTP in assuring that all selected PMDT facilities meet national TB-IC standards, and ensuring a safe working environment for health staff and patients, including environmental controls.

In coordination with the NTP and DG Medical Services, TB CARE I-Indonesia partners—KNCV, FHI 360, and WHO—provided technical assistance (TA) focusing on the achievement of three outcomes: increased political commitment to TB-IC, scaled-up implementation of TB-IC strategies in multiple settings, and stronger TB-IC monitoring and measurement.

### Key Results

#### National TB-IC Guideline

In 2012, TB CARE I-Indonesia provided TA to develop and finalize the National Technical Guideline for TB-IC. In 2014, this guideline was updated to include the FAST strategy (**F**inding TB Cases **A**ctively, **S**eparating Safely and **T**reating Effectively). The FAST strategy was adapted for the Indonesian country context as **TemPO** (**Tem**ukan pasien

secepatnya, **P**isahkan secara aman dan **O**pati secara tepat – **Find Actively, Separate safely and Treat effectively**).

The NTP developed and printed the TemPO guidelines in September 2014, working in collaboration with the Indonesian Infection Control Association (PERDALIN), the Infection Control Committee of Persahabatan Hospital, and TB CARE I-Indonesia. The guideline covers TemPO implementation in both primary health facilities and referral hospitals. As a supplement to the guideline, TemPO posters, booklets and videos for healthcare workers and patients were developed and distributed nationwide. TemPO was slated to be piloted in 10 PMDT hospitals by December 2014, starting with Persahabatan Hospital, which was the first to complete their SOP on this strategy.

In a related initiative, DG Medical Services, in collaboration with TB CARE I-Indonesia, developed a technical guideline on building and infrastructure for primary healthcare facilities to prevent and control airborne infection. This guideline will provide standards for all airborne infection control, including TB, varicella, measles, etc. Architectural, mechanical and electrical engineering consultants were contracted to provide technical input and designs for health facilities. This technical guideline was printed in September 2014 for distribution to relevant stakeholders.

### Facilities Implementing TB-IC

TB CARE I-Indonesia provided technical assistance for improvement of TB-IC, including renovations for environmental control, in a total of 15 PMDT hospitals and 20 PMDT satellite sites.

All PMDT sites, including newly established sites, are now implementing TB-IC standards. TB-IC is one of the subjects covered in PMDT training modules for health staff and was revised following the revision of the TB-IC guidelines and introduction of the TemPO (FAST) strategy.

TB CARE I-Indonesia initiated the development of SOPs for screening healthcare workers (HCWs) in hospitals and provided technical assistance for their implementation in PMDT referral sites. The SOPs were developed and piloted in six hospitals. TB screening for HCWs was conducted in August – October 2014 in eight hospitals in seven provinces.

Of the total of 207 HCWs screened only 11 presumptive TB cases were found, and none of them were confirmed as active TB cases. The screening was limited to nurses and



*Figure 9. Technical guideline on building and infrastructure for primary health facilities to prevent and control airborne infection*

physicians on TB wards, since the main focus of the initiative was to test the SOPs as well as advocate the importance of TB screening for all HCWs.

Capacity building for TB-IC: TB CARE I-Indonesia also initiated TB-IC in-house training to improve TB-IC implementation at health facilities. This in-house training provides infection and prevention control (IPC) teams at health facilities with practical steps to apply, and simple ways to assess and monitor “air-borne” infection control measures. During the TB CARE I implementation period, this training was conducted in four provinces with a total of 11 hospitals, 3 BKPM and 12 public health centers, and reached 106 participants (44 male and 62 female). National facilitators assisted by provincial facilitators served as resource persons and facilitators for this training, including post-training assistance with follow-up action for improvement.

To strengthen the regulatory environment and promote political commitment to the implementation of TB-IC in all hospitals in the country, TB CARE emphasized inclusion of TB-IC in the National Standards for Hospital Accreditation. It also supported the Basic Medical Service Directorate of the MoH in developing a TB-IC tracer instrument as a tool for assessment of TB-IC implementation as part of the assessment process for hospital accreditation.

### **TB Infection Control in Prison Settings**

TB CARE I-Indonesia supported phased TB-IC implementation in 41 prisons/DCs, applying the TB-IC self-assessment tool and technical guidelines developed with TB CARE I support. By 2014, 28 prisons/DCs had written documentation of their TB-IC self-assessments and TB-IC plans based on the tool.

Annual TB mass screening and TB screening of new inmates were implemented. In 2013, cough surveillance was introduced in eight prisons/DCs; 210 inmates (209 male, 1 female) were trained as “cough officers”. Unfortunately, the recording of the results was not standardized. In 2014, the TemPO strategy was disseminated to the prisons/DCs.

TB-IC improvements in the 41 prisons/DCs included: triage and fast tracking of TB suspects, creation of open-space waiting areas at prison clinics; ensuring that TB suspects and patients wear surgical masks for personal protection; the training of inmate volunteers on cough etiquette and surveillance (8 prisons/DCs); the installation of portable sputum-collecting booths (25 prisons/DCs); simple renovations of prison cells for better natural ventilation; and advocacy to prison management to create isolation rooms for TB patients (20 prisons/DCs). Twenty-eight prisons/DCs in four provinces developed TB-IC SOPs that were signed by the prison/DC heads.



*Figure 10. Treatment observer giving TB medicine to inmates with TB in an open-space area in Cipinang DC. (Yulius Sumarli, Cipinang DC)*

## 7. Programmatic Management of Drug Resistant TB (PMDT)

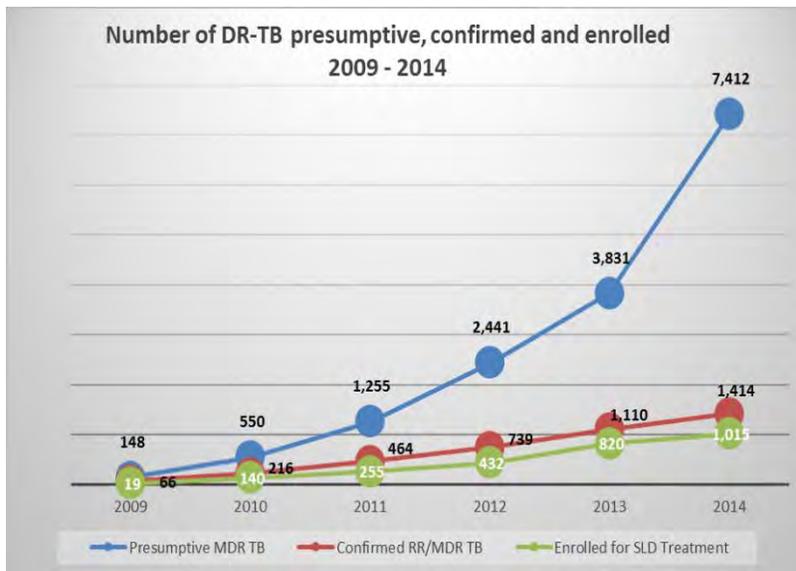
Universal access to quality PMDT services for patients with drug-resistant strains of TB (DR-TB) is a priority for both USAID and the NTP. To move toward this goal, the NTP set three main strategies: rapid expansion of PMDT services; improving the quality and accessibility of PMDT services; and strengthening commitment, resources and program management.

PMDT was first piloted in Indonesia in 2009 in two sites, with substantial support from TB CAP and TB CARE I-Indonesia. All of the main TB CARE I-Indonesia partners—ATS, FHI 360, KNCV, MSH, The Union and WHO—provided continuous technical assistance on PMDT expansion throughout the lifespan of the program.

### Expansion of PMDT services

By Sept 2014, the original two PMDT sites at the start of the TB CARE I-Indonesia program had expanded to 26 fully operational PMDT referral centers in 24 provinces, along with nine sub-referral hospitals and 698 satellites.

In line with this expansion, the number of presumptive MDR-TB patients screened by the NTP increased from 148 patients in 2009 to 7,412 patients in 2014 (Graph 9).



Graph 7. Number of presumptive, confirmed and enrolled RR/MDR-TB patients, 2009-2014

Cumulatively, over the full five-year period, 15,637 presumptive MDR-TB patients were screened, of whom 4,009 were confirmed to have MDR-TB/RR-TB, and 2,681 (67%) were enrolled for SLD treatment. There was a slight improvement in treatment initiation over time (64% in 2010 vs. 71% in 2014). Moreover mortality of patients before enrollment of treatment decreased significantly from 11 % in 2012 to 2% in 2014.

Graph above shows the outcome of rapid PMDT expansion, resulting in a significant increase in case finding. A significant reduction in treatment delay was also achieved, with 18% of confirmed cases starting treatment within seven days. However, delays of up to six months were also observed at some hospitals, especially in new PMDT sites. This was primarily ascribed to patients' lack of socio-economic support, clinicians waiting for all baseline tests to be completed before treatment initiation, and occasionally, the time taken to convince patients to initiate therapy. A study conducted in Persahabatan Hospital, one of the PMDT treatment centers, found that most of the MDR-TB patients came from middle-low income families; 40% lost their jobs due to DR-TB treatment; and the cost for treatment-related transportation accounted for 1/3 of family income.

Thus, despite the significant increase in case finding, low utilization of the present diagnostic capacity is obvious. Against an established capacity of more than 28,000 tests per year in 2014, only 4,308 presumptive cases were tested with GeneXpert in the first half of 2014. Aside from lack of information on the referral system among primary health care service providers and private practitioners in some provinces with geographical barriers, diagnostic capacity is not being adequately utilized. This could be due to insufficient sputum transportation from public health services or designated specimen-collection sites. This appears to be due to insufficient funds, lack of packing materials and experience, and lack of mechanism for the sample transportation, including the reluctance of courier companies to deal with infectious materials.

At the end of the TB CARE I-Indonesia project, plans are in place to have at least one PMDT referral hospital in each province by 2015, supported by sub-referral hospitals where needed (based on size and burden of disease in the province concerned). The decentralization of patients to the nearest satellite facility is conceived as one way to overcome access barriers and address the logistic challenges related to daily treatment intake.

With TB CARE I-Indonesia's support, PMDT services were also expanded to reach vulnerable populations in prisons. From 2012 to 2014, 89 presumptive MDR-TB inmates were found, 29 were confirmed and 26 of whom were put on treatment. TB CARE I-Indonesia also provided sputum specimen packaging and transfer support to 50 physicians and nurses in 33 prisons in six provinces. This resulted in the examination of presumptive DR/MDR-TB inmates as shown in Table 3.

Year	# of prisons intensively supported for PMDT (cumulative)	# of presumptive DR/MDR-TB cases among inmates	# of confirmed DR/MDR-TB cases	# of cases put on treatment
2012	20 (1 Satellite: Pengayoman Hospital)	4	3	3
2013	26 (5 Satellites: 4 prisons and Pengayoman Hospital)	56	9	7 (2 died before treatment)
2014	41 (8 Satellites: 7 Prisons and Pengayoman Hospital)	29	17	16 (1 Waiting for treatment)

*Table 3. Results of DR/MDR-TB case finding among inmates*

### **Improved Accessibility and Quality of Services**

- Diagnostic capacity

As discussed in the section on laboratories, TB CARE I-Indonesia supported the continuous expansion of DST laboratory services for patients being investigated for MDR-TB. Additionally, protocols for specimen transportation were established as a critical part of ensuring the acceleration of case-finding. Starting in 2013, TB CARE I-Indonesia initiated specimen transportation in supported areas using varied approaches. This is being further refined and piloted in collaboration with JSI. Based on the results of the pilot, the most successful approach(es) will be replicated in other sites.

- Capacity building

Emphasis was also given to improved clinical capacity in DR-TB case management by facilitating clinical management trainings that provided a detailed review of epidemiological, biological, clinical, laboratory, and diagnostic components of DR-TB, including best approaches to treatment, as well as its programmatic components. These courses were facilitated by TB CARE I-Indonesia and conducted throughout the project. In all, 152 clinicians (86 males, 59 females) were trained in five courses, all of whom passed the training with good results. Most of the participants were clinicians working directly with TB patients, although some were physicians working with the partners or other NGOs.

By the end of TB CARE I-Indonesia, 10 local facilitators are equipped with the capacity to replicate the training to meet country demand in upcoming years. These 10 facilitators will also function as national reference resources for the management of difficult DR-TB cases.

- Systematic review

TB CARE I-Indonesia also facilitated “enhanced” clinical cohort reviews at Persahabatan and Soetomo Hospitals. The MDR-TB cohort review is a systematic process to evaluate the interim status and final outcomes of MDR-TB patients in the treatment programs. The primary purpose of the review is to achieve delivery of high-quality care through a critical and systematic review of each MDR-TB case. The process enhances the quality of patient information, and accountability at all levels of the treatment program. Meetings include multi-disciplinary staff from hospitals, district offices and the NTP. The “enhanced” model of cohort review includes steps beyond the simple review of data outcomes present in most standard cohort review procedures and provides an opportunity for feedback to both treating clinicians and programmatic staff regarding treatment challenges, reasons for treatment default, and treatment outcomes, in order to identify both patient-specific and system-wide interventions. The review identifies educational and operational needs, program weaknesses and areas for improvement.

Findings for the different cohorts were similar, with a 10% death rate and 17% loss to follow-up rate for the Q2 2013 cohort (6-month interim status), and a 44% treatment success rate, 12% failure rate, 21% death rate, and 21% loss to follow-up rate for the Q4 2011 cohort (24-month end-of-treatment outcome) at the last review. Twenty-six programmatic challenges were addressed and action steps identified by the multidisciplinary group. Progress towards resolution and any new challenges will continue being evaluated on a quarterly basis through cohort review sessions.

In line with the cohort review findings, national data (summarized in Table 4) also indicate that the decline in treatment outcomes is due to high loss to follow-up. While treatment success rates were good for the 2009 and 2010 cohorts, increasing levels of loss to follow-up and death (25% and 15% respectively) were observed among the enrolled MDR-TB patients in the 2011 cohort. The major causes identified for loss to follow-up were lack of socio-economic support, lack of good-quality patient education, and poor tracing mechanisms. These top three causes could be directly observed during the cohort analysis process in hospitals. Limitations in health personnel, and poor side-effect management are major contributing factors.

	2009	2010	2011	2012
<b># Enrolled</b>	19	140	255	432
<b>6th month Interim</b>	74%	63%	68%	70%
<b>TSR</b>	58%	68%	58%	51%
<b>Default</b>	11%	11%	25%	27%
<b>Mortality</b>	11%	13%	15%	15%

*Table 4. Treatment outcomes 2009-2012*

It should also be noted that a significant proportion of diagnosed MDR-TB cases—sometimes as high as 28%—were not enrolled on treatment in certain large hospitals. In 2013, a total of 820 MDR-TB cases out of the 1,110 detected (73.8%) were enrolled for treatment. From January to October 2014, only 1,015 (71.7%) out of 1,414 detected

cases were enrolled for treatment. The major reasons for non-enrollment were patients refusing treatment for fear of side effects and severe socio-economic consequences (loss of job, income and anticipated high transportation costs) in the absence of proper social protection.

The roots of the problems include: limited financial support for patients to overcome the socio-economic consequences of treatment, the absence of a social protection mechanism for patients—including job security, limitations in health workers at PMDT facilities (lack of staff and rotation of trained workers), and limitations in the communications and counseling skills of health workers to effectively inform motivate and convince patients.

- Patient empowerment

In order to improve HCW communication and counseling skills, TB CARE I-Indonesia supported the NTP in developing a PMDT counseling module that was later adapted into a PMDT communication module. This method involves an expert patient trainer (EPT) as a strategy to improve the communication skills of HCWs in PMDT sites. Up to 2014, TB CARE I-Indonesia supported the training of 52 EPTs (30 male, 22 female) from five provinces (DKI Jakarta, East Java, South Sulawesi, Central Java, North Sumatra). TB CARE I-Indonesia also facilitated communication training for HCWs in 5 PMDT sites. In 2014, a new strategy was introduced to enrich this communication module using motivational interviewing skills (Motiv8). One Training-of-Trainers for Motiv8 Master Trainers was conducted in 2014 with 23 participants (8 males, 15 females) consisting of staff from the MoH, MoLHR, TB CARE I and some CSOs. This new motivational skills approach will be incorporated into the PMDT communication module for HCWs.

- Peer Educator Groups

In effort to address the poor outcomes of the PMDT program, TB CARE I-Indonesia also initiated another new approach involving ex-DR-TB patients as peer educators starting in 2013. This peer educator approach is designed to empower patients by establishing support groups in which patients can provide psychosocial support to other patients. **Peer support is built on shared personal experience and empathy; it focuses on individual's strengths rather than weaknesses, and works towards the individual's wellbeing and recovery.** It is expected that peer educators can serve as agents of change, motivators, and role models for other patients, leading to increased adherence to treatment.

Peer educator support is provided to patients from the time confirmation of the diagnosis is given, through one-on-one or group sharing and discussion. It is also provided through widely-shared hotline numbers and routine hospital visits.

TB CARE I-Indonesia started with a pilot in DKI Jakarta in 2012. It soon became clear that the approach worked well and could be replicated to other areas. Another key result of the pilot was the emergence of patients' voices, not only at the local level (DKI Jakarta) but also in several national activities (including active patient involvement in

developing a pocket book for DR-TB patients). Learning from the pilot in Jakarta, TB CARE I-Indonesia replicated the model in other sites, and as an additional form of NTP support, assisted the NTP with the development of a Peer Educator Training Module and Guideline.

Up to September 2014, the peer educator model has spread to five other PMDT sites in four provinces (West Java, Central Java, East Java and South Sulawesi). As a result, 115 patients have been trained as peer educators in six PMDT sites (five provinces), and seven patient-based organizations have been established in six provinces (including North Sumatra). In May 2014, TB CARE I-Indonesia also started to support peer educators to conduct home visits to defaulters, as a result of which 10 of 23 defaulters successfully resumed treatment (in Jakarta, Surabaya, Malang, and Makassar).



*Figure 11. Peer educator activities: hospital and home visit and patient-group activities*

The Project team learned that the role of patients as peer educators is crucial in providing psychosocial peer support to DR-TB patients. However, expansion of patient organizations and peer educator groups is hampered by limited resources for operation and capacity building. In the last year of the project TB CARE I tried to link the peer educator groups to the networks of established CSOs in order to create a larger support basis and sustainability.

### **Strengthened Commitment, Resources and Program Management**

During the project, there has been a gradual increase in political commitment, along with a steady strengthening in the partnerships between the NTP and local/international partners. Despite this, the majority of funding for PMDT is still from donors. An increasing number of staff dedicated to PMDT has been allocated at national and provincial levels. Every province that established a PMDT referral center is required to recruit PMDT technical officers (funded by TB CARE I and Global Fund). Improvements in partnerships are evident from the increasing number of non-government, faith-based and community-based organizations providing support for PMDT.

Moreover TB CARE I assisted the NTP and provincial health offices (PHOs) to develop long-term PMDT plans. The plans need to include programme targets, plans for expansion of services, and funding needs. However, commitment to PMDT in the provinces varies depending on the perceived priority of TB and MDR-TB. Although the PHOs are overall in charge of the health services in the provinces, including PMDT services, this role is not adequately exercised in all provinces. In most cases, the referral hospital for MDR-TB is the overall manager of MDR-TB cases in clinical as well as programmatic areas. It is clearly evident in provinces where PHO staffing is inadequate that clinical and programmatic services are usually disconnected to some extent. The long-term provincial PMDT plans already developed in 26 provinces should be used to direct future efforts to obtain local government commitment.

The National PMDT Guidelines were updated in 2014 to include new definitions and expanded criteria for risk groups for DR-TB testing, and full treatment protocols for DR-TB. Other relevant policies, regulations, and guidelines are now in place, as follows:

- The first draft of a National PMDT Long Term Plan 2015-2019 is available, and needs to be integrated into the national strategic plan. Provincial long-term plans are available in 26 provinces and will provide direction for target setting and program monitoring;
- Pocket handbooks for PMDT satellites and for MDR-TB patients have been developed (final drafts of both are available for printing); these will specifically provide easy-to-understand information for both providers and patients to improve the quality of treatment and patient treatment adherence;
- PMDT training modules have been updated to improve compliance with the updated guidelines;
- SOPs have been developed for patient support, including psycho-social support, to guide implementation by enablers;
- PMDT technical guidelines and SOPs have been developed to guide diagnosis, treatment and referral in prison settings.

All of these documents are expected to serve as guidance and reference sources to support better program implementation and ensure better adherence and treatment outcomes. They will also contribute to obtaining approval for proposals for GF phase 2 funding; and GF can use them as a reference in assessing the feasibility of the targets set in any proposal, especially for PMDT.

## **Challenges**

Despite the positive achievements described above, several challenges need to be addressed:

1. A very low proportion of retreatment cases are being notified, with less than 3% of the new cases in 2012 and similar proportions in 2013. The low proportion is probably caused by misclassification of retreatment cases (inadequate history taking), aggravated by shortages in the availability of the Category II regimen.

This reduces the chances for early identification of drug-resistant cases, resulting in underestimation of drug-resistant caseloads among the notified cases.

2. A significant proportion of diagnosed MDR-TB cases—sometimes as high as 28%—are not enrolled on treatment in certain large hospitals. The major reasons for non-enrollment are patients refusing treatment for fear of side effects and severe socio-economic consequences (loss of job, income and anticipated high transportation costs) in the absence of proper social protection.
3. Group 5 anti-TB drugs are unavailable in the country, which makes choices for drug replacement in the standardized regimen difficult, specifically in cases of side-effects and drug reaction. There are also very limited options for constituting a regimen for pre-XDR and XDR cases, making the existing regimen weak. The introduction of new second-line drugs will increase options for regimen development for complicated cases as well as for pre/XDR patients.
4. There is wide variation in the quality of side-effect management: Many satellite treatment centers are not fully aware of existing SOPs for the management of mild side effects and hence, refer them to referral hospitals, which are already overburdened. This practice often leads to delays and improper management of side effects. This is also observed in referral sites. Therefore, aggressive tackling of adverse events is needed to prevent loss to follow up. In some hospitals, this is the main reason why patients stop their treatment. The establishment of active pharmacovigilance for SLDs will also provide a database to improve management of adverse events for DR-TB patients.
5. The role of patient groups and peer educators is crucial in providing psychosocial support to DR-TB patients. The patients' acceptance of this approach, and rapid growth in the establishment of patient groups could be observed in several TB CARE I-supported PMDT sites. Given the expansion needed, sufficient TA should be provided to build peer educator capacity and strengthen patient-group organization. However, limitations of the TA resources available for this need to be addressed. TA to all of the sites has been mainly provided by three social workers recruited under TB CARE I. Some CSOs have begun involving peer educators in projects/activities to a limited extent, but to be effective, they will have to adopt and incorporate this model into their regular programs, instead of following a project-based approach.

## **8. TB/HIV**

When the TB CARE I-Indonesia project began in 2010, Indonesia had one of the fastest growing HIV epidemics in Asia, characterized as a concentrated epidemic, with an estimated prevalence of 0.2% among the adult population nationally, but considered a generalized epidemic in Papua, where HIV prevalence was 2.5%. An estimated 190,000 to 400,000 people were living with HIV in the country.

Meanwhile, estimated prevalence of HIV among incident TB cases was 3.0% nationally, and TB was the leading cause of death for people living with HIV (PLHIV). Yet, despite the overlapping clinical and epidemiologic interactions between TB and HIV, policy and programmatic efforts to address TB and HIV had historically been implemented independently of each other.

Integrated TB/HIV activities had only begun to receive Indonesian government attention through the National TB Program (NTP) and National AIDS Program (NAP) in the previous two years, with FHI 360 as a leading international organization working with partners such as WHO and KNCV under TB CAP. Initially, their focus was on supporting the development of national policy, curricula and training modules for TB and HIV staff, supervision tools, and IEC materials; forming TB/HIV technical working groups; training selected health providers; and establishing an electronic TB/HIV database in pilot provinces.

Still, only low proportions of TB patients knew their HIV status, due to limited access to HIV testing and counseling services, caused by weak coordination between TB and HIV programs at province/district/facility levels, limited coverage of TB/HIV collaborative activities, and lack of a comprehensive approach to infection control in existing TB/HIV collaborative activities. Thus, one of the priorities of the NTP was the rapid expansion of TB/HIV services, as part of a collaborative integration with the Continuum of Care (CoC) approach for HIV services, to intensify HIV testing among all TB patients, and ensure ART access for all co-infected patients.

Accordingly, TB CARE I-Indonesia focused on improving TB and HIV coordination, including linkages between TB/HIV and PMDT services; strengthening the management and follow-up of TB/HIV and MDR-TB cases; and scale-up of Isoniazid Preventive Therapy (IPT) implementation.

The implementation of TB/HIV collaborative activities was supported in seven provinces during the first three years and expanded to 10 provinces (55 districts) during the last year of the project. Three TB CARE I-Indonesia partners—FHI 360, KNCV, and WHO—provided technical assistance, including clinical mentoring and program monitoring, and supported training at the national level (for the NTP and NAP), and provincial/district levels.

## Key Results

### TB and HIV Coordination

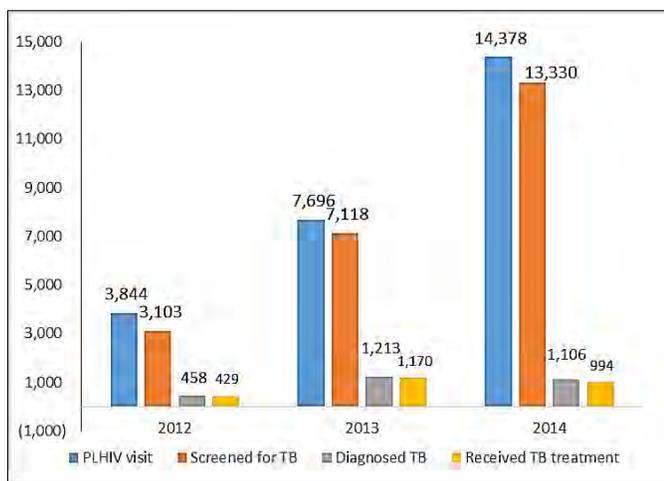
Continuous assistance from TB CARE I-Indonesia to both the NTP and the NAP resulted in the development of the TB/HIV National Action Plan 2015-2019; a TB/HIV management guideline; a TB/HIV technical guideline; and the inclusion of childhood TB/HIV and MDR-TB/HIV in the ARV guideline; and also, the creation of TB/HIV joint plans (2014-2015) in all 33 provinces.

TB CARE I-Indonesia also assisted the establishment and strengthening of TB/HIV working groups at national and provincial levels (in 12 provinces) as a mechanism to strengthen coordination between the two programs. This resulted in a steady increase in the number of hospitals providing DOTS and TB/HIV services, from 92 in 2012, to 208 in 2013, and 262—or 81% of all ARV hospitals—in 2014. However, although coordination of TB and HIV services is improving, coverage of testing, IPT, and ART are still low.

The majority of TB patients are screened and treated in PHCs whereas the majority of HIV testing, treatment and care is conducted in hospitals. In March 2013, the MoH issued a new regulation on HIV prevention, Permenkes no. 21/2013, which includes HIV testing for TB patients regardless of their HIV risk factors. Before that, the TB/HIV national guidelines used HIV risk factors as the basis for offering HIV testing to TB patients. The MoH has also issued MoH Regulation no. 5/2014 which backs up PHCs to provide HIV testing, treatment and care. TA to facilitate TB/HIV care in PHCs should be one of the key areas of technical assistance in the future.

Up to 2013, TB CARE I-Indonesia assisted 73 selected health facilities to strengthen TB/HIV activities. In 2014, this assistance was expanded to cover all health facilities implementing strategic use of ARV (SUFA) in 55 districts (10 provinces).

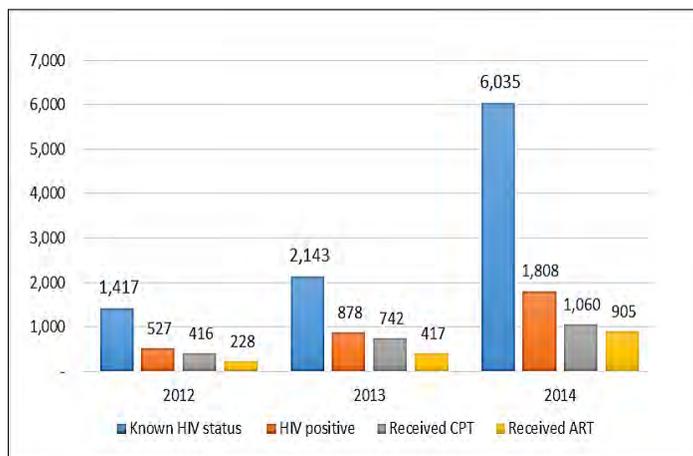
As a result of these changes, intensive case finding (ICF) among PLHIV has significantly improved but is still far from optimal: in 2014, 92% (13,330/14,378) of PLHIV visited TB/HIV collaborative facilities in the TB CARE I-supported area for screening for TB symptoms and were treated accordingly (Graph 10). In contrast, the progress of ICF for HIV in TB patients was slow. Initially, in 2012 only 1,417 of 8,783 TB patients received HIV testing (Graph 11).



*Graph 8. TB burden among PLHIV in TB CARE I-supported areas, 2012-2014*

This was because testing sites were limited to the selected 73 health facilities and based on HIV risk

factors. As a result of the expansion of SUFA in 2014, the number of TB patients who found out their HIV status significantly increased, from 2,143 in 2013 to 6,035 in 2014 (Graph 11).



**Graph 9. HIV burden among TB patients in TB CARE I supported areas, 2012-2014**

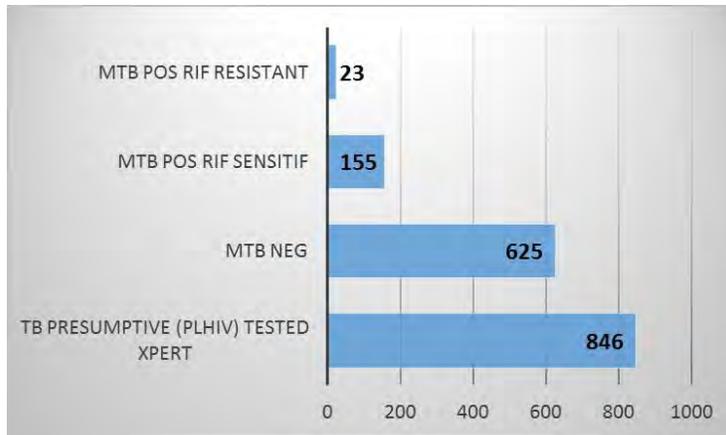
The National Guidelines on ART for PLHIV, 2011, which recommended providing ART to TB-HIV patients regardless of CD 4 level, is not widely known. Several of the national guidelines have not been widely distributed. The assumption was that socialization (dissemination/ orientation) of TB and HIV coordinators at the PHOs on the new guidelines would be adequate. Regular mentoring was provided to facilities after training on using and promoting the national guidelines.

Although many breakthroughs in TB/HIV collaboration have been made, the progress of the TB/HIV program has remained slow. The likely reason for this may be that the speed of the TB program is not up to par with the speed of the HIV program. Therefore in the future we need to assist in scaling up the HIV expansion plan, especially with regard to facilities that can conduct HIV testing. More comprehensive activities are needed. A joint PPM and TB/HIV approach needs to be strengthened.

It is expected that Challenge TB will continue to assist both the TB and HIV programs to produce better and more synchronized reporting and recording and endorse the usage of daily dosages in the intensive phase of treatment for PLWHA with TB.

### **Xpert test for PLHIV**

Starting in late 2012, a national policy from the MoH mandated that all PLHIV with presumptive TB should be tested with Xpert. TB CARE I-Indonesia supported 10 provinces in the development of a mechanism to link ART referral hospitals to corresponding laboratories providing Xpert examination, to ensure optimal TB diagnoses in PLHIV. Internal linkages between PMDT units and HIV units in PMDT referral hospitals were also a focus in this effort. Up to 2014, TB CARE I-Indonesia assisted and supported the development of SOPs to strengthen PMDT and HIV unit linkage in five PMDT referral hospitals (Saiful Anwar Hospital, Moewardi Hospital, Karyadi Hospital, Cilacap Hospital and Jayapura Hospital).



**Graph 10. Utilization of Xpert for TB-Presumptive PLHIV up to 2014**

As a result, the use of Xpert for PLHIV with TB symptoms increased: by the end of November 2014, 155 Rif-sensitive and 23 Rif-resistant TB cases were found among 846 Xpert-tested PLHIV (see Graph 12).

These figures are still considered low relative to the diagnostic capacity of Xpert. Possible causes for this discrepancy are lack of coordination between HIV units

and PMDT/lab units, as well as limited on-site cartridge availability. In cases where cartridges are limited, tests for presumptive DR/MDR-TB cases are prioritized. TB tests for PLHIV using Xpert need to be expanded to all hospitals with access to Xpert to increase coverage. The lessons learned from the implementation of the SOPs to strengthen PMDT and HIV unit linkages should be documented and used as a basis for plans for expansion to other sites.

### **Isoniazide Preventive Therapy (IPT) Piloting and Rollout**

In 2012, TB CARE I-Indonesia assisted the NTP with the introduction and piloting of IPT implementation in Indonesia by developing a technical guideline for IPT implementation, SOPs, monitoring and evaluation tools, and a training module. Software to input the data (Figure 12) and a website to report IPT results from hospitals were developed that can be accessed by TB and HIV officers at district/provincial/national levels. The overall budget for the IPT pilot was covered by TB CARE I and Global Fund. Four hospitals were selected in this pilot phase: Ciptomangunkusumo and Persahabatan Hospital in Jakarta, and Marzuki Mahdi and Hasan Sadikin Hospital in West Java.



**Figure 12. TA to use IPT software (Betty Nababan)**

The hospitals started enrolling PLHIV for IPT in late May 2012. The screening involved assessing whether or not they had active TB (WHO recommendation: cough, fever, weight loss, night sweat). In the absence of any of these symptoms, health staff would refer patients for chest x-ray examinations to exclude active TB. The pilot phase of IPT implementation showed good results, with 85% completion (see Figure 13).

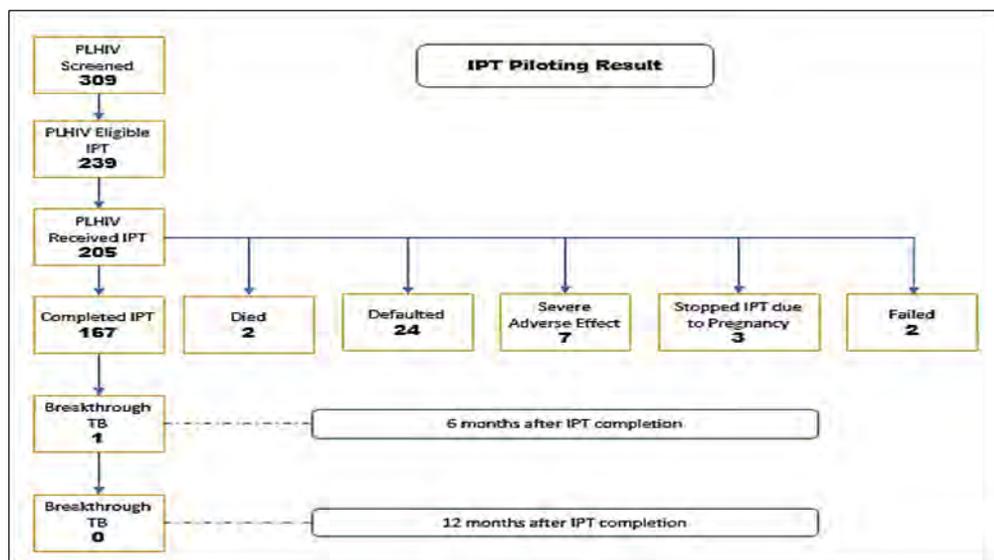


Figure 13. Results of the pilot phase of IPT implementation

In 2014, the NTP, with support from TB CARE I-Indonesia, expanded the implementation of IPT to 33 hospitals in eight provinces (Table 5), so that by late September 2014, 5,805 PLHIV were screened for TB, 649 were eligible for IPT, and 375 (58%) were initiated on IPT.

<b>NO</b>	<b>PROVINCE</b>	<b>ART HOSPITALS</b>
1	North Sumatra	RSUP Adam Malik, RSUD Pirngadi Medan, RS Haji Mina, RS Bhayangkara
2	DKI Jakarta	RSUP Persahabatan, RSPI Suliati Suroso, RSUD Tarakan, RSUD Fatmawati
3	West Java	RSHS Bandung, RS Marzoeeki Mahdi Bogor, RSUD Bekasi RSUD Gunung Jati Cirebon
4	Central Java	RSUD Cilacap, RSUD Banyumas, RSUD Moewardi Surakarta RSUD Margono, Soekatjo Purwokerto
5	East Java	RSUD Dr. Soetomo, RSSA Malang, RSU Balambangan Banyuwangi RSU Paru Surabaya
6	Bali	RSUP Sanglah, RSUD Wangaya, RSUD Badung
7	South Sulawesi	RSUD Wahidin, RSUD Labuang Baji, RS Daya, RS Jumpandang Baru
8	Papua	RSU Jayapura, RS. Abepura, RSMM Mimika, RSUD Merauke, RS. Dian Harapan, RS. Nabire

Table 5. List of ART hospitals participating in IPT scale-up

## 9. Health System Strengthening (HSS)

A strong health care system is necessary to ensure adequate access to quality services and the sustainability of these services in the NTP.

The implementation of innovative, systematic approaches to TB prevention and care, such as DOTS and HDL, along with other approaches introduced in the other technical areas covered by the project, already contributed to a stronger base for the health system. Yet the health system was still weak, due to shortages of skilled human resources (especially due to staff rotation at provincial and district levels); limited or ineffectively allocated domestic financing; inadequate surveillance, information and management systems; and poor coordination between TB services and other health services, etc. There was a clear need to achieve greater efficiencies across the overall system to allow the NTP to operate efficiently and cost-effectively.

Thus, in this technical area, FHI 360, KNCV, MSH, The Union and WHO provided technical assistance to help the NTP to embed TB control (and all of its components) as a priority within national health strategies, plans and services, supported by: the development of more adequate human resources; matching domestic financing; and the engagement of other stakeholders as partners (non-MoH public sector, private care providers, CSOs, NGOs, communities).

### Key Results

#### TB Human Resource Planning

TB CARE I-Indonesia made a variety of specific efforts, including intensive support, technical assistance and training facilitation to address HR issues in hospitals, including PMDT sites. It also provided more general-purpose assistance to the NTP to develop a more ambitious overall HR strategy for the TB control program, incorporating PMDT, childhood TB, TB/HIV, and intensified case finding. The main entry point was intensified collaboration with the national level- The Agency of Development and Empowerment Human Resource of Health (BPPSDMK) of the Ministry of Health and coordination with provincial- and district-level civil service boards (*Badan Kepegawaian Daerah* – BKD) to ensure staff availability and planned staff rotations.

Deliverables in the HR area include a complete review of TB staff workloads to identify obstacles that prevent quality TB control services including PMDT, and updated health facility staff job descriptions in relation to TB control (formal or informal) to ensure that TB and PMDT-related responsibilities are included. Curricula for initial training of health facility staff and other health service providers were updated to ensure that TB case

detection and treatment tasks were included among their job functions. This was followed up by the development and implementation of provincial HR plans, and the establishment of competent provincial training teams and training coordinators in all provinces.

## **TB Financing**

One of the most notable TB CARE I-Indonesia achievements in the HSS technical area was the inclusion of TB case management in the National Health Insurance Scheme (JKN/UHC) and the development of guidelines on the roles of government funding and insurance financing. This was in line with MoH Regulation no. 28/2014, a Guideline to the Implementation of the National Health Insurance Scheme—which was also developed with TB CARE I-Indonesia's assistance and facilitation, with full support from the Minister of Health and Chief of the Health Taskforce of JKN along with many partners and stakeholders.

This innovative work has been recognized internationally and become a benchmark for the implementation of universal health coverage (UHC), leading the way for discussions on other programs, such as AIDS and malaria. One example of this recognition was the invitation of USAID and the World Bank to Indonesia to share its experience at an **international workshop entitled "Public Private Mix (PPM) Models for the Sustainability of Successful TB Control Initiatives."** Indonesia was also invited to share its experiences on TB under UHC at the PPM Workshop in India, an Asian regional meeting on PPM in Bali, an international meeting in Bangkok, and the Global Symposium of Health System Research in South Africa.

TB CARE I-Indonesia support in the TB financing area through both local and international technical assistance resulted in many other achievements. For example, early studies conducted by TB CARE I-Indonesia with the NTP provided evidence on TB costing, economic burden and insurance are significant inputs for development of the National Strategic TB Plan for 2015-2019.

TB CARE I-Indonesia assistance was instrumental in the development of an exit strategy to make the TB Control Program financially sustainable. Since donor funding is decreasing while costs are increasing, due to the expansion of TB and MDR-TB detection and treatment, the exit strategy is aimed at increasing domestic funding for TB (through increased local government allocations and revenue generation especially from insurance) and achieving efficiencies. Meanwhile the government has committed to allocate funding to fully cover the budget for FLDs. Another exit strategy developed with TB CARE I assistance was a domestic financing scheme for AIDS, TB and malaria.

Various tools were also developed in the TB financing area with TB CARE I-Indonesia support:

- **The TB Economic Burden Analysis tool, which allows one to estimate the cost of TB to society,** was internationally regarded as an innovative credit to the Indonesian MoH. USAID used the results of the TB Economic Burden Report to develop an advocacy concept paper for a public-private partnership between NIKE and USAID Indonesia, as a possible flagship initiative for USAID's Science, Technology and Innovation program. NIKE has big factory in West Java with more than 70 thousand workers. If this initiative is accepted it will enlarge knowledge of TB exposure in the workplace and contribute significantly to TB control in Indonesia in the next phase of the USAID program.
- The TB and MDR-TB Services Costing tools, which are currently being utilized by the NTP and extended users such as academics, other healthcare stakeholders, and NGOs, to advocate for increased resources for TB services, and for a more accurate evidence base for budgeting. These tools were also used in the preparation of the Global Fund TB proposal, and expanded to allow for the projection of costs and financing over 25 years, to **produce data for the MoH's TB Financing Roadmap. The Government of Indonesia** has adopted them, and Gadjah Mada University is providing training in the use of the tools for rollout to the provinces and districts.

In addition to assisting the development of TB financing tools, TB CARE I-Indonesia successfully assisted in organizing and facilitating an International Sustainable Financing for TB workshop in country, attended by representatives from Myanmar, Thailand, Malaysia, Laos, Vietnam, The Philippines and China. The TB financing work of the NTP was also disseminated globally with extensive TB CARE I-Indonesia support through publications and conference presentations, resulting in Indonesia being increasingly recognized as a world leader in TB financing.

Global publications on TB financing in Indonesia include an analysis of TB services coverage under different insurance schemes to help inform discussions on how to best cover TB under national social health insurance, and an analysis of the monitoring of TB expenditures in order to estimate and report domestic financing figures to the MoH and GFATM.

## **CSO Engagement**

TB CARE I-Indonesia provided technical assistance for the development of a country strategic plan for CSO support of TB control, as the basis for the development of the Community and CSO Engagement National Action Plan 2015-2019. Concurrent with National Action Plan development, training for CSOs and NGOs involved in PMDT was conducted.

TB CARE I-Indonesia was also actively engaged in the establishment of the National Stop TB Partnership Forum, providing technical assistance and helping to develop the forum's

plans. This Forum is now actively involved in organizing stakeholder consultations for the development of the new strategic plan and Concept Note for NFM Global Fund.

Moreover, TB CARE I provided technical assistance to two large NGOs under CEPAT to align their work plans with the new strategic directions and priorities of the NTP during SSF Phase 2, mainly to establish stronger community and patient support during the expansion of TB/HIV and MDR-TB activities. This has resulted in close collaboration between these NGOs and local peer educator groups, paving the way for expansion of their networks.

## **Social Mobilization**



*Figure 14. World TB Day Commemoration, Jakarta, 2012 (Fainal Wirawan)*

With TB CARE I-Indonesia assistance from the beginning of the TB CARE I project, the NTP has actively disseminated information on TB to the public. Activities have included workshops, seminars, discussions, press conferences, fun walks and bike rides, and social media campaigns through Twitter, Facebook and blogs.

In 2013, TB CARE I-Indonesia held a series of social media blogger contests on the **theme of "Find and Cure a TB Patient."** The contests were held in eight parts from March 24 to June 12, 2014, with the participation of 279 bloggers, who posted over 530 articles in their blogs, and more than 250 twitter users, who actively spread the message and reached an audience of over 100,000 people who gained information on TB through social media.

On October 9, 2014, four blogs involved in the "Find and cure a TB patient" campaign were the top items to come up in a Google Search for "Stigma dan diskriminasi terhadap pasien TB" ("Stigma and discrimination towards TB patients") as keywords.

The image shows the home page of the Tuberculosis Indonesia blog contest. The header features the title "Tuberculosis Indonesia" and the tagline "TEMUKAN DAN SEMBUHKAN PASIEN TB". Below the header is a navigation menu with links for HOME, DAFTAR PEMENANG, HADIAH, JADWAL, KETENTUAN, and TEMA. A search bar is located on the right side of the menu.

The main content area is titled "Inilah Pemenang Utama Lomba Blog #SembuhkanTB". It includes a table with the following data:

DATE	POSTED BY
17/08/2014	Blogger TB Indonesia

Below the table is a congratulatory message in a graphic format:

**SELAMAT DAN SUKSES**  
\*\*\*  
1. Liza Fathiarani | liza-fathia.com  
2. Fitria Chakrawati | fita-chakra.blogspot.com  
3. Rinrin Irma | orin.supriatna.web.id  
.....  
**Menjadi Pemenang Utama  
Lomba Blog #SembuhkanTB**

Below the graphic, the text reads: "Selamat kepada @Fatheeya @fitachakra @alvinna23 menjadi pemenang utama lomba blog #SembuhkanTB." A thank-you message follows: "Terima kasih untuk semua peserta yang sudah mengikuti lomba blog di delapan serial ini. Tetaplah berbagi informasi positif tentang #SembuhkanTB kepada masyarakat luas. Semoga pemenang-pemennya adalah ia yang tetap berkebutuhan menyembuh..."

On the right side, there is a "JADWAL TERDEKAT" section titled "Agustus 2014 - Pengumuman pemenang utama". Below it is a "Tweets" section showing several tweets from the #SembuhkanTB account, including congratulatory messages and announcements.

Figure 15. Home page of the Tuberculosis Indonesia blog contest, <http://blog.tbindonesia.or.id/>

## **10. Monitoring & Evaluation, Surveillance and Operational Research**

The objectives of this technical area were to strengthen TB surveillance, and improve the capacity of the NTP to collect, analyze and use quality data for management of the TB program as well as to perform operational research.

Accordingly, the focus of activities was on providing technical assistance to the NTP in performing the National TB Prevalence Survey; developing and utilizing web-based information systems for regular-TB and DR-TB recording and reporting as well as for logistics information management; improving the TB recording and reporting system used in prisons; and conducting, publishing and applying the results of research on TB operations.

The lead partner in this area was the WHO, and the implementing partners were FHI 360, KNCV and MSH.

### **Key Results**

#### **National TB Prevalence Survey Conducted with High Quality**

TB CARE I-Indonesia was involved in the preparation, implementation, management, field monitoring, supervision and analysis of results of the National TB Prevalence Survey (NTPS) 2013. After long delays due to some procurement issues, the survey finally started in May 2013. The primary objective of the NTPS was to determine the prevalence of smear-positive and bacteriologically-confirmed pulmonary TB among people age 15 or older in Indonesia. The survey was conducted at 156 selected study sites in 136 selected districts in 33 provinces. The survey ran smoothly, and fieldwork data collection ended in June 2014.

WHO, monitoring NTPSs across the globe, acknowledged that the Indonesian survey was among the best ever, due to the facts that 100% of the designated sites were covered without any replacements; the participation rate was high at 87%; the positive screening rate was also high at >20% with very limited major false negatives; the sputum submission rate was >98%; and laboratory quality control was regularly supervised by the national TB Lab WG and SRL. These facts demonstrated that the credibility of the Indonesian survey was very high in terms of process and methodology. A total 112,350 people were enumerated, of whom 76,576 were eligible to participate, and in the end 67,946 people actually participated in the survey.

A number of valuable lessons were learned from the survey process and implementation, including the understanding that X-ray screening contributed to a significant proportion of TB case finding, and that using digital x-ray equipment was very practical because it is

transportable, easy to use, and the image can be obtained immediately. Additionally, it was found that Xpert was useful to confirm smear-positive TB, including a significant proportion of non-TB positive smears. The survey also demonstrated that regular supervision and quality control of the laboratories involved is essential to maintain the quality standard. Technical quality, which was previously good, may have been disturbed by the high workload of the survey. It was recommended that: a panel to assign case definitions and make case management decisions should be organized as part of routine procedure; networking with the NTP, provincial and district health offices should be strong to ensure that TB cases found in the survey received treatment; and a quality assurance system should be made for each method involved—laboratory, chest x-ray, data management. The use of barcodes and barcode readers was also found to be very conducive to avoid duplication and link all data.

Above all, the NTPS 2013-2014 revealed very important data about the TB situation in Indonesia: preliminary results indicated that the TB burden in the country is considerably higher than (more than double) what was previously estimated, and that transmission in the community is still high. The average prevalence of bacteriological confirmed TB cases is now estimated at 0.65% of the general population, which equals around 1.6 million TB cases, with 1 million new cases annually. Yet the prevalence of symptomatic sputum smear-positive TB patients has only slightly decreased from 120 (79-161) per 100,000 population in 2004, to 111 (86-138) per 100,000 in 2013, which is around 1% per year.

Other preliminary results showed that:

- A high proportion of TB cases found during the survey (96%) were not on treatment.
- There is a considerable delay in diagnosis of TB patients.
- 61% of all detected cases were smear-negative.
- Screening through CXR (chest X-ray) succeeded in detecting a majority (94%) of bacteriologic positive (B+) cases, while symptom screening only detected 56% of B+ cases and 67% of S+ TB cases.
- 44% of the confirmed TB patients did not report cough or bloody sputum at the time of screening (based on interview). This shows that screening based on these key symptoms results in a high proportion of missed TB cases. This is probably the main reason why many TB cases were not identified in earlier surveys.
- Among participants who admitted that they were under treatment at the time the data was collected, only 20% could be traced in the TB surveillance system. Among participants who were under TB treatment, around 50% were being treated in the private sector and not notified to the program.
- Prevalence was not much different in younger and older age groups. This shows that TB transmission is still high due to a large number of untreated TB cases in the community.
- Among participants who had Xpert examination, a relatively high proportion of Rifampicin resistance was found. This raises concerns about the quality of case management.

- The utilization of Xpert on smear-positive cases revealed that a high proportion of smear-positive cases could not be confirmed as TB cases.

The survey highlighted two major weaknesses of the Indonesian NTP: first, the large number of undetected cases existing in the community that are not captured by the surveillance system; and second, the high proportion of treated cases (primarily in the private sector but also in parts of the public sector not linked into the NTP network) that are not notified to the NTP.

### **Functional Web-based TB Information Recording and Reporting Systems Established**

Until 2010, decentralization of the program presented a major challenge for accurate surveillance since recording and reporting of TB cases was only paper based. With TB CARE I-Indonesia support, assistance and facilitation, new web-based information systems were introduced and widely implemented to bridge the gaps between sub-national and national levels for TB case recording and reporting. These information systems included the Integrated Tuberculosis Information System (SITT) for regular TB recording and reporting, and e-TB Manager for DR-TB recording and reporting.

- SITT development and implementation

Starting in the first year of the project, TB CARE I-Indonesia provided technical assistance to the NTP and National Data Center unit of the MoH (PusDatin) to strengthen TB data and information collection. The data collection and reporting system was transformed from excel-based to web-based. TB CARE I-Indonesia assisted in the design of the SITT information system to meet international reporting requirements, and also monitored the progress of software and system development to meet the specifications set.

The transformation of the system into a web-based system was done in phases. In the first phase, known as SITT 1 (Years 1-2), a compiler was created to collect TB program data including TB drug stock data and to store them in the national server. In the second phase, SITT 2, software was developed to collect patient-based data (on presumptive cases, diagnosis and treatment, drug logistics, lab quality control, and data on TB resources such as human resources, training, and health facilities implementing DOTS).

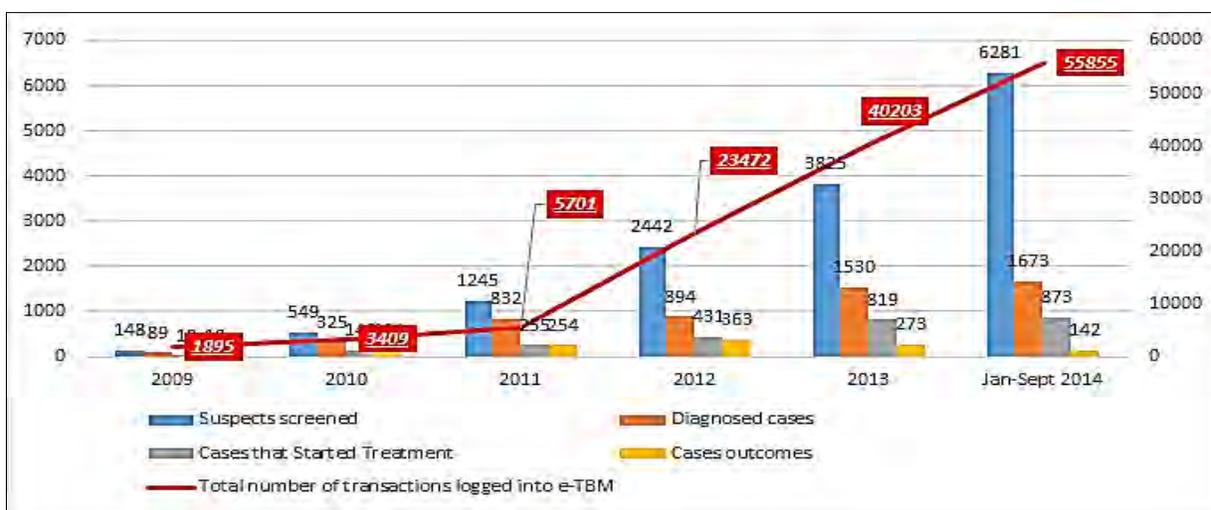
In the process of SITT adoption, TB CARE I-Indonesia provided assistance to the provinces, districts, and selected health facilities to strengthen their knowledge and skills in using SITT through on-site training, mentoring, dialogue, and regular monitoring.

In the first phase of implementation, SITT was utilized to collect and upload 2013 TB case-notification data from 91.4% of the districts (467/511) across the country. After the first phase, modifications and improvements were made to the system. The second version of SITT was launched at the end of 2013 and initiated for 2014 TB case

notification. During the implementation of the second version, major challenges emerged, related to the increasing complexity of the TB data being collected, as well as hardware failure and technical issues. A server breakdown at the National Data Center unit of the MoH (PusDatin), bugs in computer software, poor internet connections, and limitations in users' computing skills and familiarity with technology hampered the progress of adoption. By the end of September 2014 only 81.8% of the provinces (27/33) had notified 2014 TB cases. Currently the problem is being addressed.

- e-TB Manager

The e-TB Manager system brought significant improvements to second-line drug (SLD) management. It now enables monthly reviews and forecasting for each PMDT site. TB CARE I-Indonesia fully supported the introduction of e-TB Manager as part of the PMDT implementation package and the system is currently receiving data from all 23 PMDT



*Graph 11. Data Registered in e-TB Manager from 2009 to Sept 2014*

sites.

The system is now entirely customized to meet the **NTP's needs** regarding monitoring, analysis of drug stocks, and quantification for procurement. Recently, the e-TB Manager team (NTP staff, a local IT consultant and a TB CARE I expert) added new functions to the software, such as drug treatment proportion, drug availability, quantification of drug requests from hospitals, Xpert cartridge transaction history, stock position recapitulation, cartridge availability and monthly cartridge consumption, etc. Laboratories are required to update the data on all tests for treatment follow-up into e-TB manager. Reports generated by e-TB manager are now also the reference for financial reimbursements of laboratory expenses. One of the main outcomes of utilizing e-TB Manager to strengthen the Logistics Information Management System (LIMS) was that there were no SLD stock-outs in any PMDT hospital from 2010 through 2014.

TB CARE I successfully assisted the NTP in capacity-building for implementation of e-TB Manager in all sites. As a result, the NTP is able to apply the system on its own. Responsibility for maintenance of e-TB manager is currently in the process of transition to the NTP. To this end, communication channels backing e-TB manager have been strengthened through an alert system, a discussion forum, e-mail group and an e-TBM Blog ([www.etbindonesia.com](http://www.etbindonesia.com))

### Improved Logistics Management Information System (LMIS)

TB CARE I-Indonesia continuously assisted the strengthening of the LMIS throughout the project. The manual (paper based) recording and reporting system for first-line TB drugs (FLDs) was converted to a web-based reporting system in 2012 and integrated into the SITT in 2013. SITT allows various logistics-related reports to be automatically generated. These reports include National Drug Stocks, Monthly Drug Availability Supply, District and Province Reporting Completion, Drug Stock-Out, Drug Quantification, Planning, and several others.

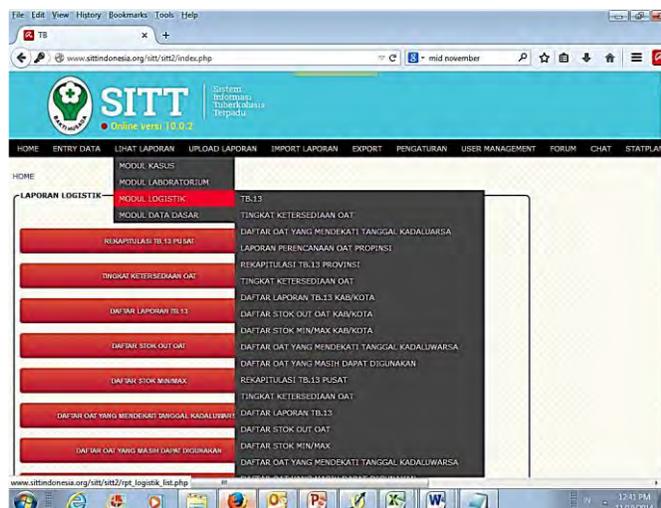


Figure 16. SLD Logistic Feature Report on SITT

e-TB Manager is now fully used as the national LMIS for SLDs (in 23 PMDT hospitals in 20 provinces) supporting the management of drug-resistant TB.

### Strengthened TB/HIV Data Recording for Prisons and Health Facilities

In the past very few TB data on inmate patients were reported to the Directorate General of Corrections (DGC). The reason for this under-reporting was that many TB cases from prisons/DCs were notified through public health centers and booked as such. In collaboration with the NTP, TB CARE I-Indonesia provided technical assistance to the DGC to strengthen TB data collection from prisons/DCs. TB reporting forms were revised to also include TB/HIV data and a requirement was added to ensure that forms are also submitted to the district health offices. TB/HIV surveillance is conducted through the SITT, while the HIV program has started using an excel format "TB/HIV support book" to report 10 variables of TB/HIV in HIV-ART units.

To further enhance surveillance TB CARE I-Indonesia contributed to building the TB/HIV data recording and reporting capacities of TB/HIV teams at national, provincial, district,

and health facility levels. This was done through regular mentoring and data-validation activities together with the provincial-level offices of the Ministry of Justice and Human Rights and district/provincial-level TB programmers.

### **Drug Resistance Surveillance (DRS)**

After finalization of the DRS survey in Central Java and East Java, TB CARE I-Indonesia provided support for the establishment of sentinel DRS. A protocol was developed and implementation followed in six provinces—North Sumatra, DKI Jakarta, East Java, West Java, Bali and South Sulawesi (2012-2104). The final results from the East Java DRS were finalized in 2013 showing an MDR rate of 1.9% among new cases and 9.3% among retreatment cases. The final results of the sentinel DRS (phase I in 4 provinces: Jakarta, Bali, East Java and South Sulawesi) revealed an MDR-TB prevalence rate of 2.1% among new cases and 29% among retreatment cases; however, due to limited sample numbers, the level of confidence in these results is low. Based on the results and lesson learned from the National TB Prevalence Survey and the sentinel DRS, a nationwide DR-TB survey will be conducted in 2015 and TB CARE I supported the development of a masterplan for this endeavor.

### **Operational Research (OR)**

TB CARE I-Indonesia continued to support the capacity strengthening of provincial operational research teams, enabling these teams to conduct OR based on NTP priorities and needs. This support is channeled through the Tuberculosis Operational Research Group (TORG) of the NTP. TORG was established in 2004 and has facilitated implementation of OR for 33 OR groups from 27 provinces in Indonesia up to now (see map for distribution of OR teams by province). USAID has supported OR implementation since 2004.



*Figure 17. OR projects assisted and completed during TB CARE I*

The assistance provided by TORG to OR groups covered training on: proposal development, data management and analysis, and policy brief and publication writing (see Figure 19).



*Figure 18. Process of OR courses conducted by TORG Indonesia (courtesy of TORG Indonesia, Impact OR Project 2014)*

TB CARE I continued its support to TORG by facilitating courses for 10 OR groups from eight provinces (2011-2014). Two of the OR research papers have been accepted for international publication, as follows:

- “Factors associated to referral of tuberculosis suspects by private practitioners to community health centres in Bali Province Indonesia,” (Batch 7-8), accepted by Bio Med Central (BMC), 2013.
- “Embedding Operational Research into National Disease Control Programmes: Lessons from 10 years of experience in Indonesia,” accepted by Global Health Action, MS ID: 25412 - Editorial Decision, 2014.

In the fourth year of TB CARE I, TORG conducted an impact study to measure the influence of OR on TB program policy and practice. Even though the main objective of the OR courses is to build capacity of provincial OR teams, one of the requirements is for OR groups to hold dissemination sessions to provide feedback on OR results to health officers and other stakeholders at provincial level. The study results showed that of 25 (measurable) recommendations resulting from OR, 11 (44%) had been adopted to shape new policies.

TB CARE I-Indonesia assistance has successfully guaranteed continuous OR funding through its incorporation in Global Fund SSF phase 2. There will be an annual “**call for OR proposals**” **focusing** on NTP needs and priority topics. TB CARE I-Indonesia assisted TORG and NTP to establish the “**Guideline for Selection** Standards and Facilitating the Implementation of Tuberculosis Operational Research in Indonesia,” which will serve as a guide for the first round of OR based on the “**call for proposals**” **mechanism** to be funded by GF SSF phase 2.

## **11. Drug Supply and Management**

The foundation for any TB program is an efficient system ensuring that quality-assured anti-TB drugs are always available in the right place at the right time and in adequate quantities.

Through TB CAP, USAID provided the NTP with technical support on anti-TB drug procurement, logistics management, monitoring, recording and reporting. Yet the supply chain was hampered by inadequate storage and inventory control practices, infrastructural limitations, as well as limited human resource capacity and poor managerial systems, leading to repeated stock-outs. Coordination between major stakeholders, including The National Agency of Drug and Food Control (BPOM), Pharmaceutical Services (Binfar), NTP and other disease programs was inadequate to address the complexity of the supply chain.

Thus, the aim of TB CARE I-Indonesia in this area was to support the establishment of a nationwide Logistics Management Information System (LMIS) to ensure a sustainable/uninterrupted supply of drugs to support effective TB treatment services. This included technical assistance on the review and monitoring of stocks, improved analysis, forecasting, recording and reporting mechanisms for better logistics management, and the implementation of an electronic surveillance system. KNCV, MSH, and WHO were responsible for providing technical assistance in this area.

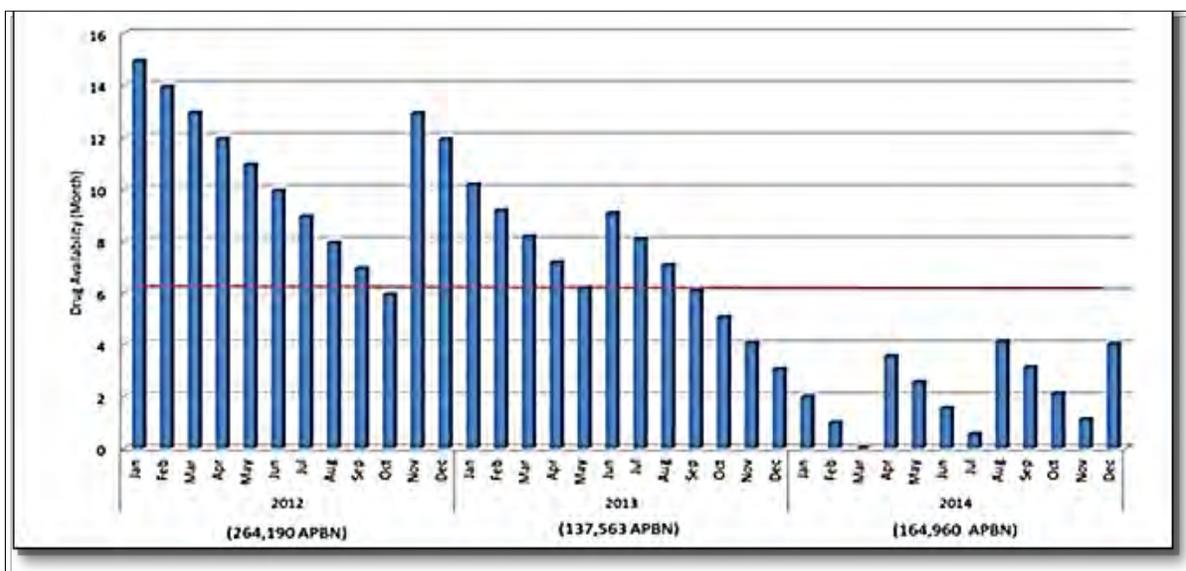
Given that drug availability is an important measure of supply-system functioning, the absence of TB drug stock-outs by the end of the project could be taken as a key indicator of success.

### **Key Results**

#### **Regular Analysis and Forecasting of Critical Commodities**

TB CARE I-Indonesia provided support to the national logistics team of the NTP to produce inventories, review current and anticipated pharmaceutical stocks, and forecast needs for critical commodities, especially second line drugs (SLDs) and laboratory supplies. This has resulted in much better control and reduction of potential under- or over-stocking of commodities.

During TB CARE I, multiple and regular commodity forecasts were made year-round, and reviews of SLDs and commodities were institutionalized into regular meetings with all stakeholders involved. All SLD forecasts were shared in a timely manner with the Global Drug Facility (GDF), which supplies the SLDs, to allow for the time required for supply planning by the product sources. The net result of this **support was a “zero stock-out”** situation, especially with regard to SLDs.



Graph 12. Estimation of national stock level Category I, 2012-2014

Graph 14 shows the example of a regular report produced by TB CARE I-Indonesia to monitor and forecast drug quantities to avoid stock-outs. It also shows how the Logistics Management Information System (LMIS) was implemented in Indonesia. Utilization of the Integrated Tuberculosis Information System (SITT) for LMIS started in 2014 (see section 10), and it is expected that this system will allow the national-level logistics team to get valid and timely data from the provinces for better quality analysis.

### Procurement Supply Management (PSM) Plan for Global Fund Developed

Another deliverable of the logistics team of TB CARE I-Indonesia was the development of a procurement and supply plan for Global Fund (GF). As a result, the NTP successfully secured a logistics budget from the GF Grant Round 8 phase 2, Round 10, and Single Stream Funding (SSF) phases I and II (see Table 6). Technical assistance was provided,

GF	Approved PSM Budget
Round 8 phase 2	\$ 2,942,245
Round 10	\$26,607,509
SSF Phase I	\$23,816,330
SSF Phase II	\$21,705,267

from the drafting of the proposal through to the approval obtained, and consisted of various activities including the quantification of pharmaceuticals, health product commodities, health equipment, procurement supply management (PSM) costs and non-health products.

Table 6. Budget secured from Global Fund for logistics

## Central Warehouse Improved

In 2014, TB CARE I-Indonesia assisted the NTP to improve second-line TB drug warehousing management at its central warehouse. An assessment was made together with the NTP, as a result of which an improvement plan was developed. TB CARE I-Indonesia continued to provide support for the plan's implementation, including procurement of equipment (e.g. thermometers, drug-legend information, FEFO (First Expired First Out) management, warehouse cleaning, etc.).

At the provincial and hospital levels, TB CARE I-Indonesia also provided support, especially to ensure cold storage requirements were met by providing air conditioners for warehouses and refrigerators for Para-Aminosalicylate Sodium (PAS) at the hospitals.



*Figure 19. Good Storage practice in the SLD Central Warehouse*

## Logistics Capacity Strengthened

Rapid expansion of PMDT sites produced the need for an increase in the capacity of provincial and hospital-level logistics teams to effectively manage logistics for PMDT: they had to be able to regularly input information related to the logistics of stocks and their usage into e-TB Manager. The complete entry of data into e-TB Manager would allow the national-level logistics team to do an analysis and forecast of critical commodities. On-the-job training was chosen as the best strategy to address this need. It was conducted in 20 provinces and 23 PMDT hospitals, reaching over 400 participants in all.

TB CARE I-Indonesia also assisted logistics capacity building through several other training and workshop activities. To address the limitations of logistics staff at the national level, capacity-building activities were conducted using a cascade mechanism. Training-of-trainer sessions for provincial-level TB staff and pharmacists were conducted to strengthen the provincial training teams (PTT). Two sets of Logistics ToTs were conducted in 2012, reaching a total of 66 participants from 33 provinces.

### **National Logistics Materials Developed and Updated**

The National Logistics Handbook provides guidance for TB practitioners and pharmacists on policies, regulations and mechanisms of TB logistics management. This document also serves as a reference for the justification of budgets related to procurement plans for drugs and other critical commodities submitted to the Local Financial Auditor (LFA) of the Global Fund. The first edition was released in 2010 and an updated second edition, in 2014. TB CARE I-Indonesia provided substantial assistance to the NTP in developing and updating this document, including financial support for printing and distribution.

The National Logistics Action Plan 2010-2014 was developed to provide details on target setting, strategies and planned activities for TB logistics, as an elaboration of the logistics strategy outlined in the National Strategic Plan 2010-2014. TB CARE I-Indonesia provided technical assistance during the process of developing this logistics action plan.

TB CARE I-Indonesia also provided substantial assistance to support the development of other important logistics documents, such as a training module on national logistics and a module for MDR logistics training.

Quality assurance is essential and required for anti-TB drugs. As part of its support, TB CARE I-Indonesia provided external technical assistance to assess and develop a manual of standard operating procedures for drug quality assurance, specifically for SLDs. These SOPs are also one of the requirements set by the Global Fund. Furthermore, the project coordinates closely with the Promoting Quality Medicines (PQM) program supported by United States Pharmacopeial (USP) in order to strengthen the capacity of its national system, and to improve and sustain quality assurance and quality control of medicines in Indonesia.

## **12. TB CARE I's Support to Global Fund Implementation**

The current SSF Grant Phase 2 is titled "Accelerating progress towards universal access to quality DOTS." The grant period will end on December 31, 2015. The SSF project is implemented under two primary recipients (PRs): the Ministry of Health (MoH) with a total signed amount of USD 100,066,925 (USD 65,352,406 committed), and Aisyiyah (representing CSOs), with a signed amount of USD 9,598,184 (USD 4 million committed).

The most recent performance is rated "adequate" (B1). While there are still several outstanding management actions, GF has acknowledged the good progress made by the PR and its partners in addressing issues noted in previous periods. However, further improvement is still required. The main concerns are low absorption and high-risk cash management practices.

TB CARE I and GF support are inextricably linked and both have been essential for the achievements of the NTP. A major challenge for successful GF implementation lies in addressing the managerial risks.

The NTP of Indonesia is currently preparing to develop a TB/HIV Concept Note for NFM, which will be submitted in April 2015. An epidemiological impact assessment is being completed, and based on this strategic planning for the next five years has started, which is to be finalized in December 2014. Revision of the TB and HIV National Strategies and TB/HIV Action Plan for 2015-2019, are the key references for requests for new funding. All TB CARE I-Indonesia partners are actively involved in strategy revisions and will continue until finalization.

### **Main Approaches**

TB CARE I-Indonesia's main approach regarding GF has been to build capacity in specific technical and managerial areas of the PRs and sub-recipients (SRs), assuring that all assistance is complementary to the support provided by other sources, including GFATM. External consultants, where necessary, have provided technical support in selected areas with the objective to train and coach national technical officers and assist the NTP in problem solving. This support was realized through country visits and distance assistance.

### **Technical Support to CCM for Planning and Proposal Development**

TB CARE I-Indonesia successfully assisted the NTP with the development and implementation of the National Strategic Plan (STRANAS 2011-2014) and the drafting of an update of this plan bridging the period 2015-2016 as the basis for the R10 GF proposal. It supported CCM Indonesia with the development of this proposal, including

preparation and planning for SSF Phase 2 and GF grant negotiations. As a result Indonesia has been awarded Phase 2 renewal funding amounting to USD 66 million.

Besides final drafts of the NSP and proposals, other deliverables include a country profile for the TB procurement plan, specific action plans for all technical areas of the grants, a performance framework and M&E plan. Moreover the coalition assisted in **re-programming the R10 grant and addressing the Global Fund's SSF conditions. Assistance** was provided in close collaboration with local universities and partners.

### **Support to the CCM**

The main TB CARE I-Indonesia partners are active members of the TB-TWG (as part of the Country Coordinating Mechanism – CCM) and provide inputs and support to this working group on a regular basis. This mainly relates to the monitoring and evaluation of **grant implementation, based on the performance framework and its "dashboard,"** and also to reporting (assisting PR MoH in semi-annual monitoring for Progress Updates and Performance Reports (PUDR), VOI, RSQA and others. On request, partners assist the PR and CCM with technical troubleshooting to address bottlenecks in implementation.

### **Technical and Implementation Support to PRs and SRs**

Based on experience and system strengthening of all key aspects of TB control in TB CARE I areas, TB CARE I-Indonesia's **personnel provided** support to trainings, mentoring, supervision of GF works beyond TB CARE I geographic coverage. The technical areas included expansion of PPM, TB/HIV, PMDT, and the TB information system (SITT).

During TB CARE I, partners assisted the PRs and CCM in capacity building, including training and coaching of key staff, NTP focal points and selected SRs at central and provincial levels One ACDA course (Advanced Courses for DOTS Acceleration) for senior program managers was implemented and attended by 25 participants (17 males/8 females).

Furthermore, TB CARE I-Indonesia supported the implementation of innovative approaches co-financed through GFATM (e.g., Patient Centered Approaches (PCA), Xpert and TB CARE tools, etc.), and hospital-DOTS linkage (HDL) and PMDT expansion. This included updating and developing guidelines, SOPs and implementation plans (for all new initiatives and interventions mentioned above) and updating of guidelines for laboratories, PSM etc.

### **Implementation of TA Plans**

During Phase 1 SSF GFATM, a significant part of the budget was allocated to technical assistance (TA) for the PRs MoH and Aisyiah and their SRs. TA plans were included in both SSF Phase I grants, however both PRs faced serious administrative and managerial constraints on implementing these plans due to complicated government administrative procedures for procurement, the review process, and lack of response from consultants.

This resulted in significant delays in implementation of the TA and low absorption of the TA budget: PR MoH only absorbed 20% of the allocated USD 1.2 million TA budget.

Under SSF phase 2, both PRs requested TB CARE I partners' assistance to develop an integrated TA plan, which was developed based on the SSF phase 2 log frame and updated National Strategic Plan. The mechanism of TA for both PRs is now simplified and unified, taking lessons learned from previous experiences from SSF phase 1 into consideration. The PRs appointed KNCV as their implementing agency, given its good reputation and long experience in procurement and execution of TB technical assistance.

The general areas of TA provided to PR MoH can be categorized as support for financial management of PRs and SRs, general support for the implementation and scale-up of TB control, and support to address key recommendations from JEMM 2013 (financial sustainability, capacity building, health and community system strengthening, monitoring & evaluation, implementation research, and procurement and supply management systems).

### **Managerial Support to PR and CCM**

- Financial management assistance

On request of the TB Working Group of CCM for TB (TWG TB), a financial management specialist was contracted to conduct an in-depth assessment of the NTP's financial management system for its SSF grant. This assessment formed the basis for a short- to medium-term plan for **strengthening the NTP's financial management system, as** a requirement for Grant Renewal. The expert delivered a comprehensive plan and budget for strengthening financial management of PR and sub-recipients. Consequently, KNCV/TB CARE I contracted a local company to help implement this plan during 2013-2014, resulting in improved financial management. This contributed to an increase in rating from B2 to B1.

- Assistance for risk management

Furthermore TB CARE I assisted the PR in addressing managerial risks and in oversight (through TB-TWG of CCM), strengthening logistics management for procurement, managerial trouble shooting and tackling bottlenecks, (e.g. GF management letters, etc). Special terms & conditions and a Conditions Precedent were addressed and have now been adequately met.

## **13. The Way Forward**

### **Lessons Learned**

One of the key achievements of the TB CARE I-Indonesia project was the successful expansion and strengthening of the national TB laboratory network. As such, investments made in laboratory network strengthening have been cost effective and worthwhile. However, the need to scale-up, and additional pressures placed upon the network, based on what we have learned from the latest NTPS data make it clear that strategic adjustments and additional investments are needed.

Other lessons learned relate to limitations in the poor-quality services provided by hospitals and private providers, as well as lack of private-sector engagement with the NTP. Through TB CARE I investments, the network of private hospitals and clinics collaborating with the NTP has gradually expanded. Also the number of hospitals notifying TB patients and providing HIV and ART services has increased. This shows that the HDL approach has been effective. However, the majority of hospitals, clinics and largely unregulated private sector are not yet engaged with the NTP, do not notify TB patients, and are not yet implementing national standards for TB care. So far, only around 400 public and private hospitals and a small minority of private providers (< 2%) are engaged with the NTP.

The project also taught us that case holding and TB surveillance in hospitals are still weak: reports on case finding and treatment results are often inconsistent. This is one of the main factors hampering expansion of PMDT and TB/HIV. The large size of the private sector (80,000 to 100,000 providers) and the daunting challenges of engaging such large numbers are among the most critical negative factors influencing the performance of the TB response in the country.

### **Major Challenges to be Addressed in the Near Future**

Based on what we have learned during TB CARE I-Indonesia, the major challenges, requirements and priorities to be addressed in the next USAID-funded TB program, “Challenge TB,” are as follows:

One major challenge is to bridge the huge gap between TB incidence and case notification (both for drug-susceptible and drug-resistant TB).

Access to quality services in urban and remote areas, especially for vulnerable population groups (e.g. children, dwellers in slum areas, diabetic patients) remains limited. Strengthening basic TB control—to reach, test, treat and retain more TB cases through quality-assured program interventions—is a priority in order to reduce transmission in the community and control the spread of drug resistance. This, in combination with strengthening the quality of the diagnostic system—to facilitate inclusive early diagnosis

and intensified screening of most-at-risk populations, putting all cases diagnosed on treatment, and retaining them until treatment completion—will likely help the program to close the gap in case notification and cut transmission.

Another major challenge is to ensure that all MDR-TB, TB/HIV, and patients with co-morbidities are detected earlier, and promptly put on adequate treatment to prevent individual suffering as well as growth of the MDR-TB and TB/HIV epidemics (bearing in mind that the HIV epidemic in Indonesia is the fastest growing in the region).

A basic requirement to address both of these challenges and solve the TB problem in Indonesia is to declare TB a national health emergency. This calls for strong policies and directives from the highest level (presidential decree) to ensure increased commitment, effective leadership, and major investments by the government from national to district levels. Also required is improved coordination, with full involvement of all health departments and other key ministries, including Finance, Planning, Internal Affairs, Social Welfare and others.

Major investments will be needed for further engagement of private-sector providers (hospitals, private clinics and individual practitioners) in order to identify missing cases, close the gap in case detection, and improve treatment results for all forms of TB. To this end, full endorsement and implementation of new policies and regulations will be the requisite, and probably, most cost-effective strategy: this includes enforcement of mandatory notification, ensuring clinical standards for quality TB care, certification and accreditation of all providers and ensuring adherence to national diagnostic algorithms. At the same time, efforts to build and strengthen the capacity of private providers to effectively diagnose, treat and notify TB patients need to be intensified.

### **Specific Recommendations on the Way Forward for Challenge TB**

The following recommendations have been formulated based on the lessons learned and challenges experienced under TB CARE I in Indonesia, and are framed in terms of the three main objectives to be emphasized by Challenge TB globally: prevention of transmission and disease progression; improved access to quality patient centered care for TB, TB/HIV and MDR-TB services; and strengthened TB platforms.

#### **1. Prevention of transmission and disease progression**

##### **1.a. Expand infection control in public and private sector facilities**

- Ensure the implementation of TB-IC measures, by including the FAST/TemPO strategy in infection control plans at all service levels, both primary and referral level health facilities, targeting all PMDT, DOTS and TB-ARV sites, prisons and detention centers in collaboration with DG Medical Service, and other related ministries and professional organizations such as PDPI, PERDALIN, etc.
- Actively assist DG Medical service and the Committee for Hospital Accreditation (*Komite Akreditasi Rumah Sakit* – KARS) to ensure hospital accreditation assessors

have proficient knowledge and skills to assess TB-infection control measures as an integral part of the assessment for hospital accreditation.

- Ensure nationwide dissemination of the technical guideline for the design of primary health facilities to prevent airborne infection, and further assist the development of technical guidelines for the design of referral health facilities.
- Enforce screening for HCWs at risk of TB infection as part of occupational health, in collaboration with professional associations (IDI, PPNI, and IBI) and the Ministry of Manpower, including development of a surveillance system for HCW screening, possibly integrated in the SITT.

#### 1.b. Intensified/active case finding

Assist the NTP to close the gap in case notification and find missing cases, including MDR-TB and TB/HIV, using the following strategies:

- Assure the full implementation of mandatory notification
- Assisting the NTP to promote intensified/active case finding in high-risk groups by evaluating pilots conducted to test algorithms and tools for TB screening among DM patients and DM screening among TB patients, and develop implementation plans;
- Implementing the plan for childhood TB including development of childhood-TB training modules, scale-up of contact investigation, use of IPT for children;
- Linking with the Directorate of Nutrition and Directorate of Family Health of the MoH to integrate TB screening in the existing programs for nutrition and MCH;
- Expanding TB screening in high-risk groups, including PLHIV, prison inmates and others;
- Assisting local health services to develop interventions that assure rigorous screening of all TB and MDR-TB contacts in order to reduce TB and MDR-TB transmission;
- Supporting the **scale-up of IPT for PLHIV, concentrating on the selected “test-and-treat” districts in USAID-supported provinces.**

## **2. Improved access to quality patient centered care for TB, TB/HIV and MDR-TB services**

#### 2.a. Expanding universal access to appropriate care and treatment

Provide assistance to scale up coverage of quality TB care at all health facilities, notably those of private providers, in the following forms:

- Assist the NTP with further integration of TB services in the National Health Insurance (NHI) system and developing mechanisms to assure provider quality (through credentialing, certification, accreditation, evaluation and clinical audit). In the NHI system, primary health facilities are the backbone of TB management; thus, they need to be well equipped and strengthened. A clear and comprehensive MOU (re: financing scheme, logistics, referral, etc.) between the NHI provider and the MoH will help accelerate the process. Furthermore assistance is needed for the mapping of qualified health providers, strengthening of referral mechanisms, TB credentialing for

**NHI providers, establishment of a "Pay for Performance" payment mechanism, and data sharing for monitoring and evaluation.**

- Scale up implementation of the Clinical Pathway (AK) for TB and TB Clinical Practice Guidelines (PPK) in all health facilities that manage TB patients, and assure provider compliance with the PNPK standards and algorithms.
- Scale up universal access to quality care for TB, TB-HIV and MDR-TB by further expanding and decentralizing PMDT and TB/HIV services to district/sub-district levels, by:
  - Strengthening the capacity for referral between PMDT referral centers and health centers at sub-district level as satellite centers;
  - Strengthening the quality assurance system, by improving the capacity of national, provincial and district staff to monitor implementation of PMDT services and analyze information for program improvements;
  - Improving treatment by introducing new and shorter drug regimens, such as the introduction, piloting and scaling up of bedaquiline (currently in preparation phase with TB CARE I support for development of implementation guidelines);
  - Ensuring availability of support for adherence, based on incentives and enablers in the form of psycho-emotional and socio-economic support;
  - Assisting selected "test and treat" areas to implement systematic, intensified case finding strategies for TB and HIV (facility-based and community-based). Focus should be placed on building capacity for HIV screening of TB patients at *puskesmas* level, including provision of ART to TB/HIV-infected patients (see also under 1b);
  - Scaling up the implementation of joint TB/HIV collaborative activities and improving surveillance, especially in high-prevalence provinces and concentrated areas (developing and implementing tools for combined supervision of TB and HIV services at *puskesmas* level using RSQA);
  - Assisting the NTP to scale up IPT at the primary care level.

2.b. Strengthening laboratory networks for improved diagnostic services

- Ensure finalization and implementation of the National Action Plan for Laboratory Network Development, 2015-2019.
- Strengthen the national reference laboratories (NRLs) to undertake their roles more effectively.
- Revise the EQA model for smear microscopy and expand the quality-assured laboratory network for smear microscopy and C/DST nationwide.
- Develop and implement the Laboratory Quality Management System, including baseline needs assessment as a prelude to starting LQMS training for three NRLs and other selected reference labs.
- Further expand the diagnostic network for MDR-TB, aiming to have culture labs in all 33 provinces and increase the number of certified C/DST labs from 8 to 17 (all using liquid culture).

- Accelerate the roll-out of Xpert, applying lessons learned under TB CARE I, and implement other novel molecular technologies when available. Aim to have this Xpert technology available in all 512 districts with multiple machines in large districts.
- Advocate to clinicians/HCWs regarding the updated Xpert testing guidelines (to include pediatric and extra-pulmonary TB, and HIV patients as indications for Xpert testing).
- Roll out the specimen/isolate referral system to further shorten diagnosis turnaround time.
- Introduce other new technologies to speed up the diagnostic process and reduce diagnostic delay.
- Continue developing the competency of technical staff, including skills related to safe working practices, the application of new technologies, and laboratory management.
- Assist in the preparation of Microbiology Lab University of Indonesia as NRL for molecular technology and research for implementation of Drug Resistance Surveillance using Whole Genome Sequencing.

2.c. Expanding comprehensive care services for quality patient support

- Build the capacity of existing CSOs, TB-peer-educator groups, and HIV-patient groups to deliver comprehensive care and prevention (continuum of TB care) at community level **in selected "test-and-treat" districts.**
- Build the capacity of umbrella FBOs and CBOs to empower patients and communities to make informed decisions on accessing quality-assured healthcare providers (vs. unqualified practitioners), and as such, create an informed demand.
- Expand the number of CSOs engaging in community-based tuberculosis activities at all levels, by taking pro-active measures to reach out to new organizations, especially those already working in the areas of HIV, MCH and primary health care, and encourage them to integrate TB into their work.
- Involve CSOs in advocacy, case finding, contact tracing and treatment support for TB, MDR-TB, and TB/HIV patients.
- Ensure good coordination and collaboration with CSOs through partnership forums at national and local levels, and systematically follow-up on agreed actions.
- Integrate patient-centered approaches (PCA) into TB services by promoting the Patients' Charter in all community care services and expanding implementation of the PCA package nationwide.
- Establish health-facility level TB-patient groups facilitated by NGOs/FBOs/CBOs, to support patients and communities to access quality-assured diagnostic and treatment services, and to involve them in assessing the quality of health services.

#### 2.d. Accelerating engagement of all care providers

Major investments need to be made to scale up the engagement of private providers, including hospitals, clinics, private practitioners, private nurses ( *mantri, bidan* etc) at district level. The acceleration of scale-up is a main priority in efforts to close the gap in case detection and prevention of MDR-TB. The way forward consists of two main strategies.

##### 1. Strengthening the regulation and policy environment in support of TB control:

- Ensure legal enforcement of mandatory TB case notification through a high-level governmental decree. This remains the highest priority.
- Ensure that assessment of TB services is an integral part and parcel of the assessment process for hospital accreditation (if hospitals do not meet standards for TB control they should not be accredited for TB).
- Ensure the quality of TB services in hospitals by scaling up implementation of Clinical Practice Guidelines and Clinical Pathways (AK). This will improve transparency and accountability for future reimbursement by national health insurance.
- Assure implementation of private provider certification by involving local branches of IMA in the process of assessment for provider licensing.

##### 2. Intensifying engagement and building the capacity of branches of the Indonesian Medical Association to build strong interfaces at district level:

- Increase collaboration with provincial and district branches of professional societies to implement certification of private clinicians through enforcement of PNPk (clinical standards for TB which are in line with ISTC), as piloted through TB CARE I support.
- Develop a framework for creating interfaces between the public and private sectors at district level. Professional societies could possibly serve as formal interface agencies and bi-directional conduits between the NTP and defined groups of private providers.
- Develop and test templates for business models to guide the formation of interface agencies at district and provincial level.
- Revise and update the operational guideline for PPM based on lessons learned during TB CARE I, to serve as basis for National PPM guidelines.
- Together with IMA and IAI develop approaches for enforcement of rational drug use through their networks.
- Ensure buy-in for PPM from local governments to increase commitment, including funding support, by providing evidence from the NTPS and feedback from program data supported by intensive advocacy. PPM implementation will also strengthen external linkages, therefore supporting the implementation of the NHI system.

#### **4. Strengthened TB platforms**

##### 3.a. Strengthening political commitment and leadership

Challenge TB should intensify efforts to support the NTP in strategic planning, management and operations, and securing commitment and sustainable financial support through national health insurance and local government/partners. This support should consist of the following, among other things:

- Assist the NTP to bring the results of the NTPS to the attention of the highest political level and make decision-makers at national and sub-national levels aware of the need for strong action and increased investments in TB control, in particular by strengthening policies, regulations, human and financial resources. To this end a high level mission may be required.
- Describe the economic burden of TB to the community and based on this, develop effective advocacy information to influence national and local governments to provide sufficient funding.
- Liaise with the National Body for Social Insurance (BPJS) to ensure inclusion of the costs of TB and MDR-TB diagnosis and treatment services in the National Health Insurance system (JKN), which currently covers 50% of the population and is expected to increase to 100% by 2019. To ensure the quality of the services provided it will be essential to ensure that only certified and accredited providers linked to the NTP have access to reimbursement through the JKN.
- Assist the NTP to regularly update cost projections and use this information to raise additional funding from local sources and through CSR.

##### 3.b. Promoting comprehensive partnerships for advocacy and demand creation

- Strengthen the technical capacity of local CSOs to:
  - Enable better alignment with the national TB control strategy in effort to support expansion of quality services and continuum of care at community level;
  - Create informed demand for quality TB care services (e.g. listing of quality assured = certified providers) in order to improve the health-seeking behavior of people affected by TB;
  - Improve community awareness by providing information to local communities on TB and its prevention through mass media and community-level education on TB and HIV.
- Assist local CSOs to strengthen their advocacy capacity
  - In order to get national and local governments to increase the mobilization of local resources to respond to TB in line with the financial roadmap developed under TB CARE I;
  - By utilizing existing tools developed under TB CARE I to strengthen advocacy messages, including the TB Economic Burden Analysis Tool, which estimates the economic cost to society due to medical costs and patient costs and productivity losses;

- By developing policy briefs to keep updating and advocating on TB issues to the national and local governments, supported by more specific advocacy messages on new innovations.

### 3.c. Strengthening drug policy and management

Technical assistance to the NTP and Pharmaceutical Services (BINFAR) needs to be continued for planning and problem-solving regarding all procurement and supply chain management functions for all related health commodities, including new TB drugs, laboratory and other diagnostic items. Assistance should focus on improving SLD procurement, forecasting and quantification to ensure an adequate supply of drugs, and developing a quality assurance approach to TB medicines and health commodities, by:

- increasing national and local government commitment to assure adequate and continuous funding for FLDs and lab supplies, and developing and implementing a road map for the government's commitment to fund SLDs;
- Improving the logistics information system through SITT and e-TB Manager software implementation for national coverage and assuring effective linkage with SIKDA / SIKNAS;
- Advocating to improve regulatory control functions for TB medicines for greater control of TB medicine use and treatment—and address the misuse of these medicines—in the private sector;
- Supporting BINFAR in developing a National Supply Chain Strategy for all pharmaceuticals; and through gradual integration, bringing TB medicines into mainstream pharmaceutical management. In other words, supporting the creation of a “one door” policy for drug management to address the current high degree of fragmentation restricting the system's effectiveness;
- In collaboration with USP, supporting BPOM to ensure continuous monitoring of drug quality in public and private markets.

### 3.d. Strengthening data quality, TB surveillance, and M&E

- Introduce mandatory notification for TB in order to increase TB case notification.
- Implement the integrated TB electronic information system (Phase 2) and rollout of e-TB Manager to all new MDR-TB referral sites.
- Integrate the SITT (web-based Integrated TB Surveillance System) into the National Health Information System to further address under-notification.
- Further develop and implement a national system for Drug Resistance Surveillance, making use of new technologies, including gene sequencing.
- Provide IT support for the data collection and referral system. The current system should be continuously improved with more sophisticated technology yet simplified processes, to ensure strong linkage and quality case notification. Emphasis should also be put on initiating innovative approaches to establish sustainable interfaces at district level, to assure effective linkage between private sector providers and local NTP services (such as the introduction of a simplified recording and reporting system for private providers and linking this to the SITT).

- Conduct a national inventory study to measure the extent of under-reporting in the private sector.

### 3.e. Strengthening human resources development

This is the most critical component of the health care system and TB program and one of the major bottlenecks in the implementation of the national strategic plans. Concerted efforts need to be made to improve the development, quality and retention of qualified human resources working in technical program areas and health facilities. To ensure the sustainability of HR, collaboration with the National Body for Human Resources in Health (BPPSDM) needs to be intensified. To build capacity in the private sector, collaboration with professional societies needs to be expanded to district branch level. The HRD approach for the project has to be fully integrated, meaning that capacity building must be part and parcel of all technical components supported. Specific approaches for the next phase are to:

- Intensify collaboration and coordination with BPPSDM to mobilize additional local resources (HR and funding for training) and stimulate fresh graduates from health polytechnics and the HR Units to support provincial/district health departments for TB control.
- Further develop and update standardized modules for medical schools, a survey of fresh graduate doctors, and the inclusion of TB competencies in the National Medical Competency examination.
- Continue supporting the development of centers of excellence for MDR-TB;
- Support the updating and implementation of a TB HRD plan for Indonesia, including a component for capacity building in the private sector.
- Strengthen the national training center for TB (ReTrac), with a focus on introducing new technology and program management, including effective supervision and implementation of innovative approaches.
- Support national and provincial training teams in building the capacity of *TB Wasor* (deputy supervisors for the TB program), and a Master of Trainers training for the private sector.

## Annex I: Technical Outcome Indicators

### Universal Access

Code	Outcome Indicators and Results	Indicator Definition	Baseline (Year/ timeframe)	Year 4 Target	Year 4 Result
1.1.1	Number of facilities where quality of services is measured	<p><b>Description:</b> NTP should measure the patient perception of the quality of services available/accessible and the appropriate health seeking behavior related to TB. Available tools for this purpose are TB CAP's QUOTE TB and QUOTE TB Light tools. However, any other tools could be used to measure it. Count the number of facilities where quality of services from a patient's perspective was measured using QUOTE or any other tool in the last 12 months.</p> <p><b>Indicator Value:</b> Number</p> <p><b>Level:</b> National <b>Source:</b> NTP and TB CARE project office</p> <p><b>Means of Verification:</b> Report on quality of services from a patient's perspective</p>	0 (2010)	39 (cumulative)	39
1.1.2	Number of facilities where cost to patients is measured	<p><b>Description:</b> NTP should measure the cost to patients for TB diagnosis, treatment and/or care. One available tool for this purpose is TB CAP's Tool to Estimate Patients' Cost. However, any other tools could be used to measure it. Count the number of facilities where cost to patients was measured using any tool in the 7measured last 12 months</p> <p><b>Indicator Value:</b> Number</p> <p><b>Level:</b> National</p> <p><b>Source:</b> NTP and TB CARE project office</p> <p><b>Means of Verification:</b> Report on cost to</p>	0 (2010)	26 (cumulative)	26

		patients for TB diagnosis treatment and/or care			
<b>1.1.3</b>	TB personnel trained on the Patients' Charter	<b>Description:</b> The Patients' Charter for Tuberculosis Care (The Charter) outlines the rights and responsibilities of people with tuberculosis. The Charter outlines 15 rights: Care (3), Dignity (2), Information (5), Choice (3) and Confidence (2). This WHO indicator measures whether TB personnel have been trained on the use of the Patient's Charter in the last year. <b>Indicator Value:</b> Yes/No <b>Level:</b> National <b>Source:</b> NTP/WHO <b>Means of Verification:</b> Training report	0 (2010)	76	56
<b>1.2.1</b>	Private providers collaborating with the NTP (Note: Mission indicator)	<b>Description:</b> Number of private providers collaborating with the NTP (i.e. reporting TB case information to the NTP). This is a WHO indicator. <b>Indicator value:</b> Number <b>Level:</b> National <b>Source:</b> NTP/WHO <b>Means of verification:</b> List of collaborating private providers	284 (2012)	936	957
<b>1.2.2</b>	TB cases diagnosed by private providers (Note: Mission indicator)	<b>Description:</b> Number of new cases of TB diagnosed according to NTP guidelines by private providers <b>Indicator value:</b> Number <b>Level:</b> National <b>Source:</b> WHO <b>Means of verification:</b> Reporting forms from private facilities	1827 from recruited pulmonologists (2011)	6000 in 10 TB CARE I provinces	19,668 10 TB CARE I provinces
<b>1.2.3</b>	Status of PPM implementation	<b>Description:</b> This indicator measures the status of the Public- Private Mix (PPM) strategy and interventions. <b>Indicator Value:</b> Based on the scoring system below: 0= The country has no PPM activities	3 (2012)	3	3

		<p>1= The country has piloted at least one PPM intervention  2= The country has a PPM strategy  3= The country has started implementation of the PPM strategy  <b>Level:</b> National  <b>Source:</b> NTP  <b>Means of Verification:</b> PPM strategy; PPM reports</p>			
<b>1.2.5</b>	Childhood TB approach implemented	<p><b>Description:</b> Childhood TB is an important component of an NTP's strategy. This indicator measures the level to which childhood TB is addressed in the NTP's strategy.  <b>Indicator value:</b> Score based on the following: 0 = Childhood TB is not mentioned in the NTP Strategic Plan  1 = Childhood TB is mentioned in the strategic plan, but no activities are implemented on childhood TB  2 = Childhood TB activities are being piloted or are implemented in select sites  3 = Childhood TB is an integral part of the NTP strategic plan and regular activities.  <b>Level:</b> National  <b>Source:</b> NTP  <b>Means of Verification:</b> NTP Strategic Plan; childhood TB activity plan</p>	3 (2012)	3	3
<b>1.2.6</b>	Number of TB cases (all forms) diagnosed in children 0-14	<p><b>Description:</b> This indicator measures the number of TB cases (all forms) diagnosed in children 0-4 years of age. When childhood TB is a priority, being able to report on and measure changes in case notification by age group is important.  <b>Indicator Value:</b> Number  <b>Level:</b> National and TB CARE geographic areas  <b>Source:</b> NTP, TB CARE project, WHO  <b>Means of Verification:</b> Recording &amp;</p>	27,368 (APA3)	36,498 (10% of estimated 364,985 registered TB cases in 2014)	19,975 APA 4

		reporting system reports; TB registers			
<b>1.2.7</b>	Prisons with DOTS	<p><b>Description:</b> This indicator measures the coverage of prisons providing DOTS services. Prisons should regularly diagnose and refer suspects and should put patients on treatment in order to be qualified as providing DOTS.</p> <p><b>Indicator Value:</b> Percent</p> <p><b>Level:</b> National and TB CARE geographic areas</p> <p><b>Source:</b> NTP and TB CARE project</p> <p><b>Means of Verification:</b> NTP records on number of suspects referred, number of patients put on treatment from the prisons.</p> <p><b>Numerator:</b> Number of prisons providing DOTS</p> <p><b>Denominator:</b> Total number of prisons in the country</p>	100% (20/20) (2012)	100% (35/35)	117% (41/35)
<b>1.2.11</b>	Percentage of prisons conducting screening for TB	<p>Description: This indicator is used to monitor the implementation of screening for TB in prisons. This indicator is also required by USAID Mission.</p> <p>Indicator Value: Percentage</p> <p>Level: TB CARE I project areas</p> <p>Source: Directorate of Correctional Service Ministry of Justice and Human Rights (MoLHR)</p> <p>Means of Verification: Screening Form and Quarterly report of TB program in Prison</p> <p>Numerator: Number of prisons conducting screening for TB in TB CARE I project areas</p>	100% (20/20) (2012)	100% (35/35)	117% (41/35)

		Denominator: Total number of prisons in TB CARE I project areas			
<b>1.2.12</b>	Inmates screened for TB symptoms, diagnosed and treated for TB according to national standard	<p>Description: This indicator is used to ensure the implementation of active TB case finding and follow-up diagnosed and treatment of TB in prison</p> <p>Indicator Value: Number</p> <p>Level: TB CARE I project areas</p> <p>Source: Directorate of Correctional Service Ministry of Justice and Human Rights (MoLHR)</p> <p>Means of Verification: Screening Form, Quarterly report of TB program in Prison, TB06, TB01, and TB03</p> <p>Numerator: disaggregate number of inmates screened, sputum exam, and treated</p>	15,000 screened/1400 sputum exam/115 treated (2011)	30,000 screened/1,500 sputum exam/150 treated	50,410 screened/2,434 sputum exam/408 treated
<b>1.2.13</b>	<i>Released/transferred inmates with TB and TB/HIV in TB CARE I supported prisons come to referral facilities to continue their treatment</i>	<p>Description: This indicator is used to ensure released/transferred inmates with TB and TB/HIV continue their treatment.</p> <p>Indicator Value: Percentage</p> <p>Level: TB CARE I project areas</p> <p>Source: Directorate of Correctional Service Ministry of Justice and Human Right (MoLHR)</p> <p>Means of Verification: TB09, TB10, Quarterly report of TB program in Prison</p> <p>Numerator: Number of released/transferred inmates with TB and</p>	74/97 (76%) (APA3)	80%	86% (90/105)

		<p>TB/HIV in TB CARE I supported prisons come to referral facilities to continue treatment</p> <p>Denominator: Total number of released/transferred inmates with TB and TB/HIV in TB CARE I supported prisons</p>			
<b>1.2.14</b>	<b><i>Proportion of TB patients released from prisons during treatment and completed treatment</i></b>	<p>Description: Percentage of TB patients that are released from the prisons and successfully transferred for continuing TB treatment and have completed treatment during the respective period</p> <p>Indicator Value: Percentage</p> <p>Level: TB CARE I project areas</p> <p>Source: Quarterly report of FHI 360 Technical Officer</p> <p>Means of Verification: TB09, TB10, and TB 03</p> <p>Numerator: Number of inmates with TB and TB/HIV that are released and successfully transferred for continuing TB treatment in TB CARE I supported prisons that completed TB treatment</p> <p>Denominator: Number of inmates with TB and TB/HIV that are released and successfully transferred for continuing TB treatment in TB CARE I supported prisons</p>	13% (APA3)	70%	<p>26% (8/31)</p> <p>Low achievement due to lack of mechanism to report outcome of treatment after released from prison</p>
<b>1.2.15</b>	<b><i>Inmates with HIV screened for TB</i></b>	<p>Description: This is a process indicator for an activity intended to reduce the impact of TB among people living with HIV in prison.</p>	706/718 (98%) (APA3)	90%	98.4% (880/894)

		<p>Indicator Value: Percentage</p> <p>Level: TB CARE I Project areas</p> <p>Source: Directorate of Correctional Service Ministry of Justice and Human Right (MoLHR), National AIDS Program Ministry of Health (MoH)</p> <p>Means of Verification: HIV card, TB/HIV-help register (buku bantu TB/HIV), Quarterly report of TB program in Prison</p> <p>Numerator: Number of Inmates with HIV whose TB status was assessed and recorded during their last visit during the reporting period</p> <p>Denominator: Total of inmates with HIV seen in HIV care in Prison during the reporting period.</p>			
<b>1.2.16</b>	<p><b><i>HIV patients with active TB in prison received TB treatment</i></b></p> <p>Numerator: Number of HIV patients in prison who received TB treatment during their visit in HIV care</p> <p>Denominator: Number of HIV patients who are diagnosed with TB during their visit in HIV care</p>	<p>Description: This indicator is use to ensure HIV patients with TB received TB treatment</p> <p>Indicator Value: Percentage</p> <p>Level: TB CARE I Project areas</p> <p>Source: Directorate of Correctional Service, Ministry of Justice and Human Rights (MoLHR), National AIDS Program Ministry of Health (MoH)</p> <p>Means of Verification: HIV card, TB/HIV-help register (buku bantu TB/HIV), Quarterly report of TB program in Prison</p> <p>Numerator: Number of HIV patients in prison who received TB treatment during</p>	125/128 (98%) (APA3)	100%	92% (135/147)

		<p>their visit in HIV care</p> <p>Denominator: Number of HIV patients who are diagnosed with TB during their visit in HIV care</p>			
<b>1.2.17</b>	<p><b><i>TB patients in prisons with known HIV Status</i></b></p> <p>Numerator: Number of TB patients in prisons registered during the reporting period who have a HIV test result recorded in TB register</p> <p>Denominator: Total number of TB patients registered during the reporting period.</p>	<p>Description: This indicator measures the HIV status of TB patients. Knowledge of HIV status enables HIV-positive TB patients to access the most appropriate HIV prevention, treatment, care and support services.</p> <p>Indicator Value: Percentage</p> <p>Level: TB CARE I Project areas</p> <p>Source: Directorate of Correctional Service, Ministry of Justice and Human Rights (MoLHR) and National TB Program Ministry of Health (MoH)</p> <p>Means of Verification: TB treatment card (TB01), TB register (TB03) modified with information about TB-HIV, Quarterly report of TB program in Prison</p> <p>Numerator: Number of TB patients in prisons registered during the reporting period who have a HIV test result recorded in TB register</p> <p>Denominator: Total number of TB patients registered during the reporting period.</p>	283/407 (70%) (APA3)	100%	76% (298/394)
<b>1.2.18</b>	<p><b><i>TB/HIV co infected patients in prisons received CPT</i></b></p> <p>Numerator: Number of HIV-positive TB patients, registered over a given time period, who receive (given at least one dose)</p>	<p>Description: The purpose is to monitor commitment and capacity of the prison program to provide CPT to HIV-positive TB patients. It is important for program at prison to know the proportion of HIV-positive TB patients who receive this</p>	103/135 (76%) (APA3)	80%	82% (137/168)

	<p>CPT during their TB treatment</p> <p>Denominator: Total number of HIV-positive TB patients registered over the same given time period.</p>	<p>potentially life-saving therapy</p> <p>Indicator Value: Percentage</p> <p>Level: TB CARE I Project areas</p> <p>Source: Directorate of Correctional Service Ministry of Justice and Human Rights (MoLHR) and National TB Program Ministry of Health (MoH)</p> <p>Means of Verification: TB treatment card (TB01), TB register (TB03) modified with information about TB-HIV, Quarterly report of TB program in Prison</p> <p>Numerator: Number of HIV-positive TB patients, registered over a given time period, who receive (given at least one dose) CPT during their TB treatment</p> <p>Denominator: Total number of HIV-positive TB patients registered over the same given time period.</p>			
<b>1.2.19</b>	<i>Provinces implementing childhood TB approach</i>	<p>Description: Number of provinces implementing childhood TB approach</p> <p>Indicator Value: Number</p> <p>Level: National</p> <p>Source: NTP</p>	50 districts (TB CARE I and non TB CARE I areas) (APA3)	10 provinces in TB CARE I areas	<p>TB CARE Provinces: 9 (except West Papua)</p> <p>Non TB CARE Provinces: 15</p> <p>Total Districts:</p> <p>TB CARE: 23 Districts</p> <p>Non TB CARE: 28 Districts</p>

1.2.20	<i>Number of TB cases (all forms) notified by private hospitals in TB CARE I areas</i>	<p>Description: Number of TB cases (all forms) notified by private hospitals in TB CARE I areas</p> <p>Indicator Value: Number</p> <p>Level: TB CARE I areas</p> <p>Source: NTP</p> <p>Means of Verification: TB registers</p>	6,900 (2009) in 5 TB CARE I supported provinces only	13,600	<p>8,685 (2013) in 10 TB CARE provinces</p> <p>Low achievement due to in 2013 NTP decided to discontinue segregation for private and public hospital.</p>
1.2.21	<i>Number of TB cases (all forms) notified by government hospitals in TB CARE I areas</i>	<p>Description: Number of TB cases (all forms) notified by government hospitals in TB CARE I areas</p> <p>Indicator Value: Number</p> <p>Level: TB CARE I areas</p> <p>Source: NTP</p> <p>Means of Verification: TB registers</p>	25,645 (2009) in 5 TB CARE I provinces	34,500	37,462 (2013) in 10 TB CARE provinces
1.2.22	<i>Percentage of hospitals implementing quality DOTS in TB CARE I area</i>	<p>Description: Percentage of hospitals implementing quality DOTS in TB CARE I area. This is also Mission indicator.</p> <p>Nominator: Number of hospitals implementing quality DOTS in TB CARE I area</p> <p>Denominator: Total number of hospitals in TB CARE I areas</p> <p>Indicator Value: Percentage</p> <p>Level: National</p>	<p>127 out of 1379 (9%) (2011)</p> <p>189/1379 (13%) (2011)</p>	250 out of 1379 (18%)	265 out of 1379 (19%)

		Source: TB CARE I Means of Verification: Hospital assessment result			
<b>1.2.23</b>	<i>Percentage of districts implementing PPM in TB CARE I areas</i>	Description: Percentage of districts implementing PPM in TB CARE I area Nominator: Number of districts implementing PPM in TB CARE I area Denominator: Total number of districts in TB CARE I areas Indicator Value: Percentage Level: TB CARE I area Source: TB CARE I Means of Verification: District PPM action plan and TB CARE I reports	0/226 (0%) (2011)	35/226 (15%) (2014)	37/226 (16%)

## Laboratories

Code	Outcome Indicators and Results	Indicator Definition	Baseline (Year/ timeframe)	Year 4 Target	Year 4 Result
<b>2.1.1</b>	A national strategic plan developed and implemented for providing the TB laboratory services needed for patient diagnosis and monitoring, and to support the NTP	<b>Description:</b> A national laboratory plan has been developed that addresses strategic objectives on how the country will meet the national requirements for quality TB diagnostic services. Strategic objectives can be, but are not limited to: Establishment of reference laboratory, laboratory network, EQA program, increase laboratory capacity, improvement of HR situation, data management etc. According to strategic objectives, annual workplans and budgets with targets and	2 (2011)	3	3

		<p>indicators should be developed and implemented to implement the national laboratory strategic plan.</p> <p><b>Indicator Value:</b> Score based on below:  0 = Laboratory strategic plan is not available  1 = Laboratory strategic plan is ready but no annual implementation plan and budget available for the current year  2 = Laboratory annual implementation plan and budget is available for the current year  3 = NTP annual report for the current year includes a section demonstrating progress with the implementation of the laboratory strategic plan.</p> <p><b>Level:</b> National  <b>Source:</b> NTP  <b>Means of Verification:</b> National Strategic Plan Document</p>			
<p><b>2.1.2</b></p>	<p>Laboratories with working internal and external QA programs for smear microscopy and culture/DST</p>	<p><b>Description:</b> Laboratories have successfully established a mechanism for performing internal quality control for smear microscopy and culture/DST (e.g. performing control samples etc) and are enrolled in an EQA program, which is supervised by a higher-level laboratory (i.e. by proficiency testing, blinded re-checking and supervision visits). Participating laboratories should have met WHO standards for QC/EQA results. Both laboratories, supervising and participating, have to keep data on results for verification.</p> <p><b>Indicator Value:</b> Percent  <b>Level:</b> National and TB CARE geographic areas  <b>Source:</b> National Reference Laboratory and TB CARE Project</p>	<p>APA2 National 65% (3824/5883)</p> <p>APA2 TB CARE I 42% (1643/3822)</p>	<p>65%</p>	<p>Smear Microscopy : 1772/3161 ( 56%)</p> <p>In TB CARE I area</p> <p>C/DST : 11/11 (100%)</p>

		<p><b>Means of Verification:</b> Lab register, EQA result reports/statistics, separate supervision visit reports.</p> <p><b>Numerator:</b> Number of laboratories enrolled in EQA program for smear microscopy and/or culture/DST both nationwide and TB CARE areas.</p> <p><b>Denominator:</b> All laboratories (national and TB CARE areas separately) that perform smear microscopy and/or culture/DST.</p>			
<b>2.1.3</b>	Laboratories demonstrating acceptable EQA performance	<p><b>Description:</b> Performance of EQA is just as important as having EQA established. This WHO indicator measures the percent of laboratories enrolled in EQA for smear microscopy and/or culture/DST that successfully passed EQA in the last reporting period.</p> <p><b>Indicator Value:</b> Percent</p> <p><b>Level:</b> National and TB CARE geographic areas</p> <p><b>Source:</b> NRL, TB CARE Project, WHO</p> <p><b>Means of Verification:</b> EQA reports/statistics; supervision reports 11</p> <p><b>Numerator:</b> Number of laboratories enrolled in EQA for smear microscopy and/or culture/DST that passed the EQA assessment from the last reporting period.</p> <p><b>Denominator:</b> Number of laboratories enrolled in EQA for smear microscopy and/or culture/DST</p>	APA2 58% (952/1643)	75%	<p>C/DST : 100% (11/11)</p> <p>Note: 8 labs certified for DST + 3 labs passed their first EQA panel. At least to pass 2 EQA panel to get certification and meet the requirement of on site assessment.</p>
<b>2.2.1</b>	Confirmed link with an SRL through a memorandum of agreement	<p><b>Description:</b> The country has a written memorandum of agreement with an SRL as confirmation of a formal link with that SRL.</p> <p><b>Indicator Value:</b> Yes/No</p> <p><b>Level:</b> National</p> <p><b>Source:</b> National Reference Laboratory</p>	Yes (2011)	Yes	Yes

		<b>Means of Verification:</b> Signed memorandum of agreement			
<b>2.2.2</b>	Technical assistance visits from an SRL conducted	<b>Description:</b> A selected SRL conducts TA visits to national reference laboratories. TA visit reports should be provided by the SRL. Suggestions for improvement made by SRL should be successfully implemented. <b>Indicator Value:</b> Yes/No <b>Level:</b> National <b>Source:</b> National Reference Laboratory <b>Means of Verification:</b> Memorandum of agreement, SRL visit reports	Yes (2011)	Yes	Yes
<b>2.3.1</b>	Diagnostic sites offering advanced technologies for TB or drug-resistant TB (Note: No of DST lab is also Mission indicator)	<b>Description:</b> Number of diagnostic sites, in which GeneXpert MTB/RIF, HAIN MTBDRplus or liquid culture/DST are implemented and routinely used for diagnosis, stratified by testing type. <b>Indicator Value:</b> Number <b>Level:</b> National and TB CARE areas <b>Source:</b> NTP and TB CARE <b>Means of Verification:</b> Laboratory register, treatment register, EQA reports from supervising laboratories, implementer report, National Strategic Plan <b>Numerator:</b> Number of diagnostic sites using GeneXpert MTB/RIF, HAIN MTBDRplus or liquid culture/DST disaggregated by type of technology	GeneXpert: 5 C/DST: 2 Hain: 2 (2011)	GeneXpert: 41 Hain: 2	GeneXpert : 41 Liquid Culture/DST: 4 Hain : 2
<b>2.3.2</b>	Rapid tests conducted (Note: Mission indicator)	<b>Description:</b> Number of rapid tests conducted using GeneXpert MTB/RIF. <b>Indicator Value:</b> Number of tests <b>Level:</b> TB CARE areas <b>Source:</b> NTP and TB CARE <b>Means of Verification:</b> Lab register, TB suspect register, TB treatment register <b>Numerator:</b> Annual number of GeneXpert tests conducted	3678 successful tests (APA3)	12000 (in TB CARE I areas)	14,499 Cumulative (2012-2014)

2.3.3	Patients diagnosed with GeneXpert	<p><b>Description:</b> This indicator measures the number and percent of patients diagnosed using GeneXpert (disaggregated by RIF-resistance)</p> <p><b>Indicator Value:</b> Percent</p> <p><b>Level:</b> TB CARE areas</p> <p><b>Source:</b> NTP and TB CARE</p> <p><b>Means of verification:</b> lab register, TB treatment register</p> <p><b>Numerator:</b> Number of TB patients diagnosed using GeneXpert disaggregated by RIF-resistance</p> <p><b>Denominator:</b> Number of TB suspects tested with GeneXpert</p>	<p>Rif-sensitive 1398/3678 (38%)</p> <p>Rif-resistant 743/3678 (20%) (APA3)</p>	1600	<p>6969</p> <p>Rif-susceptible: 4693/14499 (32%)</p> <p>Rif-resistant 2276/14499 (16%)</p> <p>Cumulative (2012-2014)</p>
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### Infection Control

Code	Outcome Indicators and Results	Indicator Definition	Baseline (Year/ timeframe)	Year 4 Target	Year 4 Result
3.1.1	National TB-IC guidelines that are in accordance with the WHO TB-IC policy have been approved	<p><b>Description:</b> The TB-IC guidelines must have been approved by the NTP or MOH, and must be consistent with the 2009 WHO Policy on TB-IC. The guidelines should cover controls in healthcare facilities, congregate settings and households/communities.</p> <p><b>Indicator Value:</b> Yes/No <b>Level:</b> National</p> <p><b>Source:</b> NTP</p> <p><b>Means of Verification:</b> TB-IC Guidelines (soft copy or government link) must be submitted to the PMU.</p>	Yes (2010)	Yes	Yes
3.1.2	TB-IC measures included in the overall national IPC policy	<p><b>Description:</b> TB-IC measures must be included (in a special section on transmission-based airborne infection prevention and control) in the overall national Infection Prevention &amp; Control (IPC) policy</p> <p><b>Indicator Value:</b> Yes/No</p> <p><b>Level:</b> National <b>Source:</b> NTP</p>	Yes (2010)	Yes	Yes

		<b>Means of Verification:</b> National IPC policy (soft copy or government link) must be submitted to the PMU.			
<b>3.2.1</b>	"FAST" strategy has been adapted and adopted	<p><b>Description:</b> NTP must have adopted a FAST strategy that prioritizes the following four core interventions to implement TB IC</p> <p>a) active identification of coughing patients, b) rapid diagnosis, c) separation of TB suspects and infectious TB patients, and d) early onset of effective treatment of TB patients. (FAST - "Find cases Actively, Separate safely, and Treat effectively")</p> <p><b>Indicator Value:</b> Score based on below:  <b>0</b> = Country has not adopted the four core interventions for TB IC  <b>"FAST strategy"</b> and there are no plans for implementation  <b>1</b> = Country has adopted the four core interventions for TB IC ("FAST strategy") and there are plans for implementation but the implementation has not started  <b>2</b> = "FAST strategy" has been piloted  <b>3</b> = "FAST strategy" has been fully implemented at the national level  <b>Level:</b> National  <b>Source:</b> TB CARE project  <b>Means of Verification:</b> Any evidence of prioritizing the above four core interventions for implementation of TB IC, initiated and propagated by the MOH.</p>	0 (2010)	3	2
<b>3.2.2</b>	Facilities implementing TB IC measures with TB CARE I support	<p><b>Description:</b> Facilities that received support for implementation of TB IC measures through TB CARE out of the number of facilities planned to receive support for TB IC implementation.</p> <p><b>Indicator Value:</b> Percent <b>Level:</b> TB CARE geographic areas <b>Source:</b> TB CARE project</p>	11 (2011)	30 (30 facilities: 10 PMDT sites and 20 TB/HIV sites)	123% (37/30) Health facilities: 34 (19 hospitals, 3 BPKM, 12 HCs) Prison: 28

		<p><b>13 Means of Verification:</b> Country-wide monitoring reports or reports on the implementation of TB-IC, from districts where TB CARE I is involved.</p> <p><b>Numerator:</b> The number of facilities where TB CARE I supported the implementation of TB IC measures.</p> <p><b>Denominator:</b> Total number of facilities where TB CARE I planned to support the implementation of TB IC</p>			prisons/DCs
<b>3.3.1</b>	Annual reporting on TB disease (all forms) among HCWs is available as part of the national R&R system	<p><b>Description:</b> NTP reports the number of HCWs (Any full-time, part-time or non-paid worker engaged in facility-based health care provision) who acquired TB disease (all forms) in the reporting period as part of their existing recording and reporting system.</p> <p><b>Indicator Value:</b> Yes/No</p> <p><b>Level:</b> National</p> <p><b>Source:</b> NTP; WHO</p> <p><b>Means of Verification:</b> Quarterly, biannual or annual TB program reports</p>	(Not measured/No investment)	Yes In 10 PMDT sites in 10 provinces	Currently country data not available but TB CARE I has initiated HCW screening in 8 hospitals (7 provinces). Result : 207 screened, 11 presumptive TB, 0 confirmed

## PMDT

Code	Outcome Indicators and Results	Indicator Definition	Baseline (Year/ timeframe)	Year 4 Target	Year 4 Result
<b>4.1.1</b>	TB patients, suspected of MDR, dying between request for lab examination and start of MDR treatment	<p><b>Description:</b> The percentage TB patients suspected of MDR dying between request for lab examination and start of MDR treatment</p> <p><b>Indicator Value:</b> Percent <b>Level:</b> National and TB CARE geographic areas</p> <p><b>Source:</b> TB treatment register, laboratory register, MDR diagnosis register and MDR treatment register</p> <p><b>Means of Verification:</b> Field visits</p>	11% (36/321)  2012	< 5% (210/4350)	2% (25/1116)

		(national and TB CARE geographic areas), checking TB treatment registers against laboratory registers, MDR diagnosis register and treatment registers with reports <b>Numerator:</b> The number of TB patients (Cat I, Cat II) with confirmed HR or R resistance, who died between the date of the lab request and the start of MDR treatment <b>Denominator:</b> The total number of TB patients (Cat I, Cat II) with confirmed HR or R resistance			
<b>4.1.2</b>	MDR TB patients who are still on treatment and have a sputum culture conversion 6 months after starting MDR-TB treatment	<b>Description:</b> MDR TB patients who are still on treatment and have a sputum culture conversion 6 months after starting MDR-TB treatment. The cohort is patients put on treatment in a calendar year. <b>Indicator Value:</b> Percent <b>Level:</b> National and TB CARE geographic areas <b>Source:</b> MDR treatment register <b>Means of Verification:</b> Field visits (national and TB CARE geographic areas), checking TB treatment registers against reports <b>Numerator:</b> Number of MDR TB patients in a calendar year cohort who are still on treatment and had culture conversion latest at month 6 (having had 2 negative sputum cultures taken one month apart and remained culture negative since) <b>Denominator:</b> Total number of MDR patients who started treatment in the calendar year	49% (126/255)	85% (372/438) (2012)	59% (484/820) (2013)
<b>4.1.3</b>	MDR TB patients who have completed the full course of MDR TB treatment regimen and have a negative sputum culture (Note:	<b>Description:</b> MDR TB patients who have completed the full course of MDR TB treatment regimen and have a negative sputum culture.	72% (111/140)	75% (190/255) (2011)	58% (148/255) (2011)

	Mission indicator)	<p><b>Indicator Value:</b> Percent</p> <p><b>Level:</b> National and TB CARE geographic areas</p> <p><b>Source:</b> MDR treatment register/WHO</p> <p><b>Means of Verification:</b> Field visits (national and TB CARE geographic areas), checking TB treatment registers against reports</p> <p><b>Numerator:</b> Number of MDR TB patients in a cohort who completed a course of MDR treatment and who fit the WHO criteria for cure or completed treatment</p> <p><b>Denominator:</b> Total number of MDR patients who started treatment in the cohort</p>			
<b>4.1.4</b>	A functioning National PMDT coordinating body	<p><b>Description:</b> National PMDT coordinating body has been established, is recognized by the MOH and is functioning.</p> <p><b>Indicator Value:</b> Yes/No</p> <p><b>Level:</b> National</p> <p><b>Source:</b> NTP</p> <p><b>Mean of verification:</b> Meeting notes/agenda</p>	2	2	Yes
<b>4.1.5</b>	<p><i>Provinces with long term PMDT plan</i></p> <p>Description: Number of provinces that have long term PMDT plan</p>	<p>Description: Number of provinces that have long term PMDT plan</p> <p>Indicator Value: number</p> <p>Level: national</p> <p>Source: TB CARE I /NTP</p> <p>Means of Verification: long term PMDT plan document</p>	6	33 (100%)	<ul style="list-style-type: none"> <li>• <u>79%</u> (<u>26/33</u>)</li> </ul>
<b>4.1.6</b>	<p><i>PMDT sites assessed using the comprehensive site readiness tool</i></p> <p>Description: Number of PMDT sites assessed using the comprehensive site readiness tool.</p>	<p>Description: Number of PMDT sites assessed using the comprehensive site readiness tool. This is Mission indicator.</p> <p>Indicator Value: Number</p> <p>Level: National</p> <p>Source: NTP/TB CARE I</p> <p>Means of Verification: Result of comprehensive site readiness assessment</p>	6	35 (100%)	<ul style="list-style-type: none"> <li>• <u>35</u></li> </ul>

<b>4.1.7</b>	<b><i>PMDT sites trained and treating patients (new sites)</i></b> Description: Number of new PMDT sites that have been trained and are treating patients.	Description: Number of new PMDT sites that have been trained and are treating patients. This is Mission indicator. Indicator Value: Number Level: National Source: NTP/TB CARE I Means of Verification: TB03, TB06 MDR, monthly PMDT case report	19	35 <u>100%</u>	35 PMDT treatment centers and 12 sub treatment centers were trained (26 treatment centers and 9 sub treatment centers at 24 provinces have started treating patients)
<b>4.1.8</b>	<b><i>Percent of patients tested by Xpert with RIF+, put on treatment within 7 days</i></b> Description: Proportion of MDR-TB patients either from MDR-TB or HIV suspects that diagnosed as Rif positive with Xpert and put on the right treatment within 7 days among all Rif+ patients tested with Xpert.	Description: Proportion of MDR-TB patients either from MDR-TB or HIV suspects that diagnosed as Rif positive with Xpert and put on the right treatment within 7 days among all Rif+ patients tested with Xpert.  Indicator Value: Percentage  Level: TB CARE I supported site	12/511 (2%)	20%	18% (216/1195)

## TB/HIV

<b>Code</b>	<b>Outcome Indicators and Results</b>	<b>Indicator Definition</b>	<b>Baseline (Year/ timeframe)</b>	<b>Year 4 Target</b>	<b>Year 4 Result</b>
<b>5.1.2</b>	Eligible PLHIV enrolled for IPT during reporting period	Indicator Value: Number Description: number of eligible PLHIV enrolled for IPT Level: National Source: NTP Means of verification: health facilities report to NTP via IPTIS (Isoniazid preventive therapy information system)	205 (APA3)	500	375  TB CARE I area

<p><b>5.1.3</b></p>	<p><b>Number of PMDT sites with functioning TB-HIV linkages</b> Description: Number of PMDT sites that successfully establish linkages between TB and HIV clinics that ensure that 100% of HIV+ TB suspects receive TB tests (sputum test or GeneXpert test), and 80% are put on TB treatment during the reporting period.</p>	<p>Description Number of PMDT sites that successfully establish linkages between TB and HIV clinics that ensure that 100% of HIV+ TB suspects receive TB tests (sputum test or GeneXpert test), and 80% are put on TB treatment during the reporting period. This indicator is required by the Mission</p>	<p>0 (SOP for TB-HIV linkages available at 5 sites, improvement needed to fulfil the indicator definition) (APA3)</p>	<p>6</p>	<p>5 TB CARE I area</p>
<p><b>5.2.1</b></p>	<p>HIV-positive patients who were screened for TB in HIV care or treatment settings (Note: Mission indicator)</p>	<p><b>Description:</b> The purpose is to monitor an activity intended to reduce the impact of TB among HIV-positive patients. It will demonstrate the level of implementation of the recommendation that HIV-positive patients are screened for TB at diagnosis and at all follow-up visits. <b>Indicator Value:</b> Percent <b>Level:</b> National and TB CARE geographic areas <b>Source:</b> NTP/NAP/WHO <b>Means of Verification:</b> Reports from modified HIV testing and counseling register or HIV treatment and care register <b>Numerator:</b> Number of HIV-positive patients seen at HIV testing and counseling or HIV treatment and care services who were screened for TB symptoms at least once during year. <b>Denominator:</b> Total number of HIV-positive patients seen at HIV testing and counseling or HIV treatment and care services, over the same given time period.</p>	<p>7104/7668 (93%) (APA3)</p>	<p>85%</p>	<p>93% (13,330/14,378) TB CARE I area</p>
<p><b>5.2.2</b></p>	<p>TB patients (new and re-treatment) with an HIV test result recorded in the TB register (Note: Mission indicator)</p>	<p><b>Description:</b> The purpose is to assess how many TB patients know their HIV status, regardless of whether testing was done before or during TB treatment. In settings where HIV is driving the TB</p>	<p>2074/12904 (16%) (APA3)</p>	<p>20%</p>	<p>5% (6,035/121,007) TB CARE I area</p>

		<p>epidemic, all TB patients should be offered and encouraged to have an HIV test.</p> <p><b>Indicator Value:</b> Percent</p> <p><b>Level:</b> National and TB CARE geographic areas</p> <p><b>Source:</b> NTP/NAP/WHO/TB CARE project</p> <p><b>Means of Verification:</b> NTP reports from revised reporting and recording system; WHO report</p> <p><b>Numerator:</b> Total number of all TB patients registered over a given time period with an HIV test results recorded in the TB register.</p> <p><b>Denominator:</b> Total number of TB patients registered over the same time period.</p>			
<b>5.2.4</b>	<p><i>Number of newly identified HIV+ TB patients</i></p> <p>Description: Number of newly HIV+ TB patients during TB treatment. This indicator is required by the Mission Indicator</p>	<p>Description: Number of newly HIV+ TB patients during TB treatment This indicator is required by the Mission Indicator</p> <p>Indicator Value: Number</p> <p>Level: TB CARE I supported areas</p> <p>Source: NTP</p> <p>Means of Verification: TB03</p>	211 (2013)	1,000	756 TB CARE I area
<b>5.3.1</b>	<p>HIV-positive TB patients started or continued on antiretroviral therapy (ART) Note: Mission Indicator</p>	<p><b>Description:</b> The purpose is to measure commitment and capacity of TB service to ensure that HIV-positive TB patients are able to access ART. This indicator measures people registered as HIV-positive who started TB treatment and who also started or continued on ART (i.e. recorded in ART register).</p>	410/856 (48%) (2011)	50%	50% (905/1,808) TB CARE I area

		<p><b>Indicator Value:</b> Percent <b>Level:</b> National and TB CARE geographic areas <b>Source:</b> NTP/NAP/WHO/TB CARE project</p> <p><b>Means of Verification:</b> Reports from modified TB register, modified HIV care register or separate TB/HIV register with referral system (where appropriate)</p> <p><b>Numerator:</b> All HIV-positive TB patients, registered over a given time period, who receive ART (are started on ART)</p> <p><b>Denominator:</b> All HIV-positive TB patients registered over the same given time period.</p>			
<b>5.3.2</b>	HIV-positive TB patients started or continued on CPT (Note: Mission indicator)	<p><b>Description:</b> The purpose is to monitor commitment and capacity of programs to provide co-trimoxazole preventative therapy (CPT) to HIV-positive TB patients. It is important for programs to know the proportion of HIV-positive TB patients who receive this potentially life-saving therapy.</p> <p><b>Indicator Value:</b> Percent 16 <b>Level:</b> National and TB CARE geographic areas <b>Source:</b> NTP/NAP/WHO/TB CARE project</p> <p><b>Means of Verification:</b> Reports from modified TB register, a separate TB/HIV register, or a system to transfer data to TB program if CPT provided outside the TB service.</p> <p><b>Numerator:</b> Number of HIV-positive TB patients, registered over a given time period, who receive (given at least one dose) CPT during their TB treatment</p> <p><b>Denominator:</b> Total number of HIV-positive TB patients registered over the same time period.</p>	720/856 (84%) (2011)	85%	<p>59% (1,060/1,808)</p> <p>TB CARE I area</p> <p>Low achievement due to many clinicians do not adhere to national ART and reporting guideline.</p>
<b>5.3.3</b>	<i>HIV patients with active TB who receive TB treatment</i> Numerator: Number of all HIV	<p>Indicator Value: Percent</p> <p>Numerator: Number of all HIV patients</p>	NA (2010)	90%	90% (994/1,106)

	patients diagnosed with TB who started TB treatment Denominator: all HIV patients diagnosed with TB, registered over the same given time period	diagnosed with TB who started TB treatment Denominator: all HIV patients diagnosed with TB, registered over the same given time period  Source: NTP Means of Verification: TB Register at HIV clinic			
<b>5.3.4</b>	<b>Number of HIV-TB patients completing TB treatment</b> Description: Number of HIV patients that completed their TB treatments.	Description: Number of HIV patients that completed their TB treatments. This is also an indicator required by USAID Mission. Indicator Value: Number Level: TB CARE I supported areas Source: NTP  Means of Verification: TB 01, TB 03	NA (2011)	500	579

## HSS

Code	Outcome Indicators and Results	Indicator Definition	Baseline (Year/ timeframe)	Year 4 Target	Year 4 Result
<b>6.1.1</b>	Government budget includes support for anti-TB drugs	<b>Description:</b> The annual government budget should allocate funding for anti-TB drugs (first and second line drugs). This indicator measures the percent of the annual anti-TB drug costs paid by the government. <b>Indicator Value:</b> Percent <b>Level:</b> National <b>Source:</b> MOH and NTP <b>Means of Verification:</b> Current government budget document concerning health and/or NTP; Reports of the drug procurement department. <b>Numerator:</b> Amount of government funds used to pay for anti-TB drugs (FLDs and	Yes (2011)	100% first line drugs supported by government	59 % (IDR 12,649,972/IDR 21,416,667) All FLD are now provided by government funding, while SLD are procured through GDF/GF funding.

		SLDs). <b>Denominator:</b> Total cost of anti-TB drugs (FLDs and SLDs) for the year.			
<b>6.1.2</b>	CCM and/or other coordinating mechanisms include TB civil society members and TB patient groups	<b>Description:</b> Civil society members and TB patient groups that are officially registered as being members of the Country Coordinating Mechanism (CCM) and participate in the regular CCM meetings. <b>Indicator Value:</b> Yes/No <b>Level:</b> National <b>Source:</b> CCM <b>Means of Verification:</b> Official list of members of the CCM, List of presence of members of the regular meetings of the CCM meetings; GF Round application forms.	Yes (2011)	Yes, Stop TB Partnership forum plays active role in TB advocacy	Yes
<b>6.2.2</b>	People trained using TB CARE I funds	<b>Description:</b> Health care workers at all levels trained on any area of TB control using TB CARE funds. <b>Indicator Value:</b> Number <b>Level:</b> National <b>Source:</b> TB CARE project <b>Means of Verification:</b> Training reports <b>Numerator:</b> Number of people trained disaggregated by technical area	446 (2010)	500	UA : 20 Lab : 550 TB IC : 0 PMDT : 14 TBHIV : 45 HSS : 7 M&E : 18 DM : 179  Total : 833
<b>6.2.4</b>	<i>Provinces with developed/updated HRD plan</i> Description: Number of provinces that have developed an HRD plan	Description: Number of provinces that have developed an HRD plan Indicator Value: Number Level: National Source: NTP Means of Verification: Province reports to NTP	33 (2012)	33 (100%)	All 33 provinces already developed HRD plans 2013-2014

## M&E, OR and Surveillance

Code	Outcome Indicators and Results	Indicator Definition	Baseline (Year/ timeframe)	Year 4 Target	Year 4 Result
7.1.1	An electronic recording and reporting system for routine surveillance exists at national and/or sub-national levels	<p><b>Description:</b> The routine Electronic Recording and Reporting (ERR) TB surveillance for all TB patients is based on at least all standard variables which are included in the TB treatment register. The record/case-based data flow from data collection level to national level (via intermediate/regional levels) is digital. Note that having an ERR just for MDR-TB or at district level with case-based data (not aggregate) also fulfills this indicator.</p> <p><b>Indicator Value:</b> Yes/No</p> <p><b>Level:</b> National and TB CARE geographic areas</p> <p><b>Source:</b> NTP and TB CARE project</p> <p><b>Means of Verification:</b> Electronic system and data extracted from system are available for review.</p>	No (2011)	Yes	Yes
7.1.2	<p><i>PMDT sites implementing e-TB manager for real-time patient and inventory data in TB CARE I areas</i></p> <p>Numerator: Number of PMDT sites in TB CARE I areas implementing e-TB manager for real time patient and inventory data</p> <p>Denominator: Number of PMDT sites in TB CARE I areas</p>	<p>Description: Percentage of PMDT sites implementing e-TB manager for real-time patient and inventory data in TB CARE I areas. This indicator is also required by USAID Mission.</p> <p>Indicator Value: Percentage</p> <p>Level: TB CARE I areas</p> <p>Means of Verification: e-TB manager generated report/NTP</p> <p>Numerator: Number of PMDT sites in TB CARE I areas implementing e-TB manager for real time patient and inventory data</p>	5/5 (100%) (2011)	100 %	<p>100 % (16/16)</p> <p>In PMDT Referral and Sub Referral Hospitals in TB CARE I area.</p>

		Denominator: Number of PMDT sites in TB CARE I areas			
<b>7.1.3</b>	<i>Districts using SITT for quarterly reporting of case registers and logistics</i> Numerator: Number of districts that are using SITT for quarterly reporting of case registers and logistics Denominator: Number of total districts in TB CARE I supported areas	Description: Percentage of districts that are using SITT for quarterly reporting of case registers and logistics. This is Mission indicator.  Indicator Value: Percentage  Level: TB CARE I areas  Means of Verification: TB03, TB13a  Numerator: Number of districts that are using SITT for quarterly reporting of case registers and logistics  Denominator: Number of total districts in TB CARE I supported areas	Case register: 88% (440/499) Logistics: 61% (304/499) (APA3)	Case registers: 85% (192/226) Logistics: 60% (135/226)	Case register: 91.4% (467/511) Logistics: 91.4% (467/511)
<b>7.2.1</b>	Data quality measured by NTP	<b>Description:</b> Any aspect of data quality has been measured in the last year (internal consistency, timeliness, completeness, accuracy, etc.) at national, intermediate/regional or peripheral levels. If yes, list the dimensions being measured. <b>Indicator Value:</b> Yes/No <b>Level:</b> National <b>Source:</b> NTP <b>Means of Verification:</b> Data quality report	Yes (2012)	Yes	Yes
<b>7.2.2</b>	NTP provides regular feedback from central to intermediate level	<b>Description:</b> NTP prepares and disseminates regular, written and comparative feedback from central to intermediate levels based on analysis of national surveillance and programmatic data. Comparative feedback is when results from various areas are displayed and compared with each other to provide	Yes (2012)	Yes	Yes

		<p>context for good/poor results. Intermediate levels are any level between the health facility/peripheral level and national level (i.e. regional, district or zonal level).</p> <p><b>Indicator Value:</b> Yes/No</p> <p><b>Level:</b> National and TB CARE geographic areas</p> <p><b>Source:</b> NTP and TB CARE Project</p> <p><b>Means of Verification:</b> Annual/quarterly feedback reports</p>			
<b>7.2.3</b>	<p><i>NTP provides regular feedback from central to province level</i></p> <p>Numerator: Number of quarterly feedback reports prepared and disseminated</p> <p>Denominator: Total number of recipient units/facilities</p>	<p>Indicator Value: Percent per quarter</p> <p>Numerator: Number of quarterly feedback reports prepared and disseminated</p> <p>Denominator: Total number of recipient units/facilities</p>	4 times (2012)	100% (2011) Target 2014: 100% (33/33)	100% (33/33)
<b>7.2.4</b>	<p><i>Province provides regular feedback to district level in TB CARE I areas</i></p> <p>Numerator: Number of province provides quarterly feedback reports and disseminated to reporting districts</p> <p>Denominator: Total number of province in TB CARE areas</p>	<p>Indicator Value: Number of provinces providing quarterly feedback reports to all reporting districts</p> <p>Numerator: Number of province provides quarterly feedback reports and disseminated to reporting districts</p> <p>Denominator: Total number of province in TB CARE areas</p>	10/10 (100%) (APA3)	Target 2014 : 3 out of 10 prov (30%)	100% (10/10)
<b>7.3.1</b>	OR studies completed (Note: Mission indicator)	<p><b>Description:</b> TB CARE-supported OR studies completed in the last 12 months.</p> <p><b>Indicator Value:</b> Number (of OR studies)</p> <p><b>Level:</b> National or sub-national level</p> <p><b>Source:</b> TB CARE project</p> <p><b>Means of Verification:</b> OR study reports</p>	0 (2012)	10	10
<b>7.3.2</b>	OR study results disseminated	<p><b>Description:</b> The percent of completed TB CARE-supported OR studies (TB CARE-supported) with results that have been disseminated (i.e. publication, meetings, presentation, report).</p>	0 (2012)	10	100% (10/10)

		<p><b>Indicator Value:</b> Percent</p> <p><b>Level:</b> National or sub-national level</p> <p><b>Source:</b> TB CARE project</p> <p><b>Means of Verification:</b> disseminated OR study results (report, meeting notes, presentation, publication, etc.)</p> <p><b>Numerator:</b> Number of completed TB CARE-supported OR studies with results that have been disseminated ((i.e. publication, meetings, presentation, report).</p> <p><b>Denominator:</b> Number of completed TB CARE-supported OR studies in the last 12 months.</p>			
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## Drug Management

Code	Outcome Indicators and Results	Indicator Definition	Baseline (Year/ timeframe)	Year 4 Target	Year 4 Result
8.1.1	National forecast for the next calendar year is available	<p><b>Description:</b> A national forecast of both first and second line TB drugs for the next fiscal year has been conducted. If yes, indicate when it was done and by whom (i.e. NTP, TB CARE, other partner).</p> <p><b>Indicator Value:</b> Yes/No</p> <p><b>Level:</b> National</p> <p><b>Source:</b> NTP</p> <p><b>Means of Verification:</b> Forecasting report</p>	Yes (2012)	Yes	Yes
8.1.2	Updated SOPs for selection, quantification, procurement, and management of TB medicines available	<p><b>Description:</b> Completed and agreed upon SOPs for drug management of both FLDs and SLDs available for NTP usage that are not older than five years. FLDs and SLDs can be addressed through two separate documents or combined in one SOP.</p> <p><b>Indicator Value:</b> Yes/No</p> <p><b>Level:</b> National</p> <p><b>Source:</b> NTP</p>	Yes (2012)	Yes	Yes

		<b>Means of Verification:</b> Hard copy and/or electronic version of FLD/SLD SOPs at the NTP.			
<b>8.1.3</b>	<b><i>Districts reporting complete and timely FLD stock on a quarterly basis</i></b> Numerator: Number of districts nationwide reporting FLD stock using TB13 to its respective province on a quarterly basis Denominator: Number of districts in country	Description: Percentage of districts nationwide reporting FLD stock using TB13 format on quarterly basis among all districts in the country  Indicator Value: Percentage  Level: National  Source: NTP  Means of Verification: Drug stock data in central level  Numerator: Number of districts nationwide reporting FLD stock using TB13 to its respective province on a quarterly basis  Denominator: Number of districts in country	66% (327/492) (APA3)	80%	40% (200/499)  Under reporting due to SITT server failure during 21014
<b>8.1.4</b>	<b><i>PMDT sites reporting complete and timely SLD stock on a quarterly basis</i></b> Numerator: Number of PMDT sites reporting SLD stock using TB13b in quarterly basis to province Denominator: Number of existing PMDT sites in TB CARE I areas	Description: Percentage of PMDT sites reporting SLD stock using TB13b format  Indicator Value: Percentage  Level: TB CARE I areas  Source: e-TB manager generated report/NTP  Means of Verification:  Numerator: Number of PMDT sites reporting SLD stock using TB13b in quarterly basis to province  Denominator: Number of existing PMDT	9/10 (90%) (APA3)	100%	100% (12/12)  In PMDT Referral Hospital in TB CARE I area.

		sites in TB CARE I areas			
<b>8.1.5</b>	<i>Drugs stock-outs</i> (counts for each drug)	<b>Description:</b> Number of drug stock-out, broken down by 1st and 2nd line Indicator Value: Number Level: National Source: National/TB CARE I	0 (2010)	0 for all drugs	First line (data obtained only from 200 out of 499 district) :  Cat 1 : 3% district (15/499) Cat 2 : 11% district (53/499) Cat 3/child TB: 10% district (52/499)  Zero stock out for second line Drug

## Annex II: Knowledge Exchange

Below is a list of tools and publications that were developed with support from TB CARE I-Indonesia over the life of the project. Please contact the project staff for copies of or links to any of the listed documents.

### Technical Tools

Technical Area	Title/ Description
Universal Access	<p><u>National</u></p> <ol style="list-style-type: none"> <li>1. <i>National Guideline for TB Clinical Practice (PNPK)</i>, Ministry of Health, 2013.</li> <li>2. <i>Strategy Implementation Guideline for TB Patient Centered Approach</i>, 2013.</li> <li>3. <i>Operational Guideline for Public Private Mix</i>, 2013.</li> <li>4. <i>Clinical Practical Guideline for Health Care Facilities</i></li> <li>5. <i>Clinical Pathway at Persahabatan Hospital</i></li> <li>6. <i>Standard of Procedure for Systematic Screening Diabetes Melitus among TB Patient</i>, 2011.</li> <li>7. <i>Standard of Procedure for Health Care Worker Screening</i></li> <li>8. <i>Standard of Procedure TB Screening among Diabetes Melitus Patient</i></li> <li>9. <i>DOTS Assessment Tool for Hospital</i></li> <li>10. <i>Managerial Guideline TB Services with DOTS Strategy at Hospital</i>, Ministry of Health (Directorate General of Health Effort), 2010.</li> <li>11. <i>Preliminary Test Screening Implementation of Diabetes Melitus (DM) among TB Patients, and TB among DM patients</i>. The preliminary test conducted at Adam Malik Hospital (North Sumatra), Kariadi Hospital (Central Java), and Labuang Baji Hospital, South Sulawesi, Ministry of Health, 2014.</li> <li>12. <i>Hospital Accreditation Standard, page 236</i>. Ministry of Health and Hospital Accreditation Committee, 2011.</li> <li>13. <i>National Strategic Plan TB for Prisons System</i></li> </ol> <p><u>Provinces</u></p> <ol style="list-style-type: none"> <li>14. <i>Register Book for TB Patient Referral</i>, West Sumatra.</li> <li>15. <i>Register Forms for Child TB</i>. West Sumatra</li> <li>16. <i>Register Forms TB Patient for Private Practitioner (DPS)</i>. Form to support the system of TB reporting and recording contributed by private practitioners, West Sumatra</li> </ol>
Lab	<ol style="list-style-type: none"> <li>1. <i>Training Module Sputum Examination with TB Microscopic</i>, Ministry of Health, 2012.</li> <li>2. <i>Preparation of Microscopy Panel Test for Proficiency Test</i>, Ministry of Health, 2013</li> <li>3. <i>Culture identification and DST on Solid Media</i>, Ministry of Health, 2012.</li> <li>4. <i>National Action Plan Lab Strengthening 2011-2014</i>, Ministry of Health, 2011.</li> <li>5. <i>Standard Operational Procedure for TB Microscopy</i>, Ministry of Health, 2012.</li> <li>6. <i>Technical Guideline for Packaging, Delivering and Receiving the TB</i></li> </ol>

	<p><i>Sample</i>, Final draft version, November 2014.</p> <p>7. <i>Standard of TB Lab Service</i>, Ministry of Health, 2014.</p> <p>8. <i>Xpert Implementation Plan in Indonesia</i>, 2012.</p> <p>9. <i>Lesson Learnt Document on Rapid Implementation of GenXpert 2013</i> (S van Kampen)</p> <p>10. <i>A set of training modules:</i></p> <ul style="list-style-type: none"> <li>a. <i>Standard Operational Procedure of Sample Transportation</i></li> <li>b. <i>SOP of sample transportation</i></li> <li>c. <i>Introducing safe work practices</i></li> <li>d. <i>Laboratory Infrastructure</i></li> <li>e. <i>Laboratory Layout= Equipment</i></li> <li>f. <i>Biological Safety Cabinets</i></li> <li>g. <i>Personal Protective Equipment</i></li> <li>h. <i>Specimen Tracking</i></li> <li>i. <i>Safe Working Practices 1, Preventing Aerosols</i></li> <li>j. <i>Bio hazardous Laboratories Waste</i></li> <li>k. <i>Safe Working Practices 2, PPE, Equipment, Contamination</i></li> <li>l. <i>Use and Maintenance Equipment</i></li> <li>m. <i>Handling of Major Spill Equipment</i></li> <li>n. <i>Safe Working Practices 3, Consumables, Regents, and Containers</i></li> </ul>
Infection Control	<ol style="list-style-type: none"> <li>1. <i>Revised TB guidelines, FAST strategy incorporated</i>, Ministry of Health, 2014.</li> <li>2. <i>Technical Guideline for Preliminary Health Care Building and Infrastructure to Prevent Airborne Infection</i>, Ministry of Health, 2014.</li> <li>3. <i>TB Infection Control Guideline for Prisons System</i>, Ministry of Justice and Human Rights, 2012.</li> <li>4. <i>TB Infection Control Standard Operational Procedure for Prisons System</i></li> <li>5. <i>Standard Operational Procedure for TB Infection Control with FAST (Finding TB cases Actively, Separating Safely, Treating effectively) Strategy</i>, Ministry of Health, 2014.</li> <li>6. <i>Self-Assessment Tools for TB IC for Prisons System</i></li> </ol>
PMDT	<ol style="list-style-type: none"> <li>1. <i>Guidelines for Implementation of the Peer Educators Workshop</i>. Ministry of Health, 2014.</li> <li>2. <i>Standard Operating Procedures for the PMDT Payment Activities</i>, 2014.</li> <li>3. <i>PMDT Guidelines (Regulation of the Minister of Health, No.13/2013)</i></li> <li>4. <i>Pocket Book, PMDT for Satellite Health Care Worker</i>.</li> <li>5. <i>(Draft) National PMDT Action Plan, 2015-2019</i>.</li> <li>6. <i>Provincial PMDT Plan, 2015-2019</i>. These documents available for 26 of 34 provinces in Indonesia, 2014.</li> <li>7. <i>PMDT Guideline for Prisons System</i>. Ministry of Justice and Human Right, 2014.</li> <li>8. <i>PMDT Communication Modules for Health Care Worker</i>, Ministry of Health, 2013.</li> </ol>
TB/HIV	<ol style="list-style-type: none"> <li>1. <i>TB and TB-HIV Quarterly Report Form for Prison System</i></li> <li>2. <i>TB-HIV Supervision Checklist for Prison System</i></li> <li>3. <i>Facilitator Guideline for EPT Training</i></li> <li>4. <i>IPT Piloting Guideline, SOP, Forms</i>, 2012.</li> </ol>

	<ol style="list-style-type: none"> <li>5. <i>System Information for IPT</i>, 2012.</li> <li>6. <i>Help Book (Excel Format) for TB-HIV Recording &amp; Reporting System at Health Facility</i></li> <li>7. <i>Isoniazid Preventive Therapy (IPT) Technical Guideline &amp; Forms</i></li> <li>8. <i>IPT Information System for Piloting IPT</i>. 2012.</li> <li>9. <i>National Strategic Plan for TB-HIV 2011-2014</i> Ministry of Health, 2011.</li> <li>10. <i>Management Guideline for TB-HIV Collaborative Activities Implementation</i>. Ministry of Health, 2011.</li> <li>11. <i>Clinical Management Guideline for TB-HIV co-infection</i>. Ministry of Health, 2012.</li> <li>12. <i>SOP for MDR-HIV linkage at Persahabatan Hospital</i></li> </ol>
HSS	<ol style="list-style-type: none"> <li>1. <i>Technical Guideline TB Services under National Health Insurance System</i>. Ministry of Health, 2014.</li> <li>2. <i>TB Economic Burden Analysis Tool</i>. Management Science for Health, 2013</li> <li>3. <i>TB Services Costing Tool</i>. Management Sciences for Health, 2012.</li> <li>4. <i>MDR-TB Cost Effectiveness Analysis Tool</i>. Management Sciences for Health, 2012.</li> </ol>
M&E, OR, Surveillance	<ol style="list-style-type: none"> <li>1. A set of manuals of the Integrated TB Information System (<i>SITT</i>) <ol style="list-style-type: none"> <li>a. <i>Manual for Health Facilities</i></li> <li>b. <i>Manual for 1<sup>st</sup> Referral Lab</i></li> <li>c. <i>Manual for 2<sup>nd</sup> Referral Lab</i></li> <li>d. <i>Manual for National Lab</i></li> <li>e. <i>Manual for TB Officer at District Level</i></li> <li>f. <i>Manual for TB Officer at Provincial Level</i></li> <li>g. <i>Manual for National Level</i></li> </ol> </li> <li>2. <i>Guideline for Standard of Selection and Facilitate TB Operational Research</i>. Tuberculosis Operational Research Group (TORG), 2014.</li> </ol>
Drug Management	<ol style="list-style-type: none"> <li>1. <i>National Logistic Handbook</i>, 2010.</li> <li>2. <i>National Logistic Action Plan</i>, 2011.</li> <li>3. <i>National Logistic training module</i>, 2011.</li> <li>4. <i>MDR Logistic Training Module</i>, 2013.</li> <li>5. <i>Manual Standard Operating Procedure for Quality Assurance of TB Drug</i>, 2014.</li> <li>6. <i>National Logistic Handbook</i> second edition, 2014.</li> </ol>

### Scientific Publications & Presentations

Technical Area	Title/ Description
Universal Access	<ol style="list-style-type: none"> <li>1. Oral Presentation, "Challenges in forging partnerships for controlling TB in prisons: Indonesia experience." The Union Conference, 2011.</li> <li>2. Oral Presentation "Empowering Inmates as Cough Officer." The Union Conference, 2013.</li> <li>3. Poster Discussion, "Empowering Community Based Organization to Strengthen TB Post Release Program in Prison System in DKI Jakarta." The Union Conference, 2014.</li> <li>4. Poster Presentation, "Lessons learnt in Engaging Private Pulmonologists through Public Private Mix in Indonesia." The International Union Against Tuberculosis and Lung Disease (IUATLD) Conference, Paris, France, 2013.</li> <li>5. Poster Presentation, "International Standards of Tuberculosis Care</li> </ol>

	<p><b>Implementation by Pulmonologists in Private Practice in Jakarta."</b> The International Union Against Tuberculosis and Lung Disease (The Union) Conference, Paris, France, 2013</p> <p>6. Poster Presentation, "Peer Meetings to Increase Engagement of Pulmonologists in Private Practice." The International Union Against Tuberculosis and Lung Disease (The Union) Conference, Barcelona, Spain 2014.</p>
Laboratories	<p>1. Manuscript, "<b>Effect of Xpert MTB/RIF on diagnosis and treatment of drug-resistant tuberculosis patients in Indonesia.</b>" Van Kampen SC, et.al, 2012.</p> <p>2. Oral Presentation, "<b>Role of Xpert in PMDT expansion: experience and lesson learn in Indonesia.</b>" TB CARE I Symposium in the Asia Pacific Regional Conference on Lung Health 2013 in Hanoi, Vietnam, April 10 to 14, 2013.</p> <p>3. Oral Presentation, "TB CARE I Role in Strengthening the TB Lab Network." Lab Coordination Technical Meeting, September 17-19, Jakarta.</p>
Infection Control	<p>1. Oral Presentation, "<b>TB infection control measures in Indonesia's correctional system.</b>" The Union Conference, 2013</p> <p>2. Poster Presentation, "TB Infection Control in Prison." The Union Conference, 2013.</p>
PMDT	<p>1. Poster Presentation, "Network of PMDT in Prison." The Union Conference, 2013.</p>
TB/HIV	<p>1. Poster Presentation, "<b>HIV and TB Prevalence in Salemba Prison 2011-2012.</b>" The Union Conference, 2012.</p> <p>2. Poster Discussion, "Isoniazid Preventive Therapy in Indonesia, Better Late than Never." The Union Conference, 2014.</p> <p>3. Poster Discussion, "<b>New Integrated TB- HIV Model in Prison, Salemba Prison.</b>" The Union Conference, 2014.</p>
HSS	<p>1. Abstract, "<b>The cost of scaling up the TB Control Program in Indonesia.</b>" The Union Conference, Paris, 2013</p> <p>2. <b>Abstract</b>, "The economic burden of tuberculosis in Indonesia." The Union Conference, Paris, 2013.</p> <p>3. Abstract, "<b>Policy options and levers for financing TB services in Indonesia.</b>" The Union Conference Paris, 2013.</p> <p>4. <b>Abstract</b>, "Is TB control affordable in the absence of major donor funding? Reflections from Indonesia." The Union Conference, Kuala Lumpur, 2012.</p> <p>5. <b>Publication</b>, "The cost of scaling up TB Services in Central Java, Indonesia," 2013.</p> <p>6. Publication, "Coverage of TB Services under Social Health Insurance in Indonesia," 2013.</p>

M&E, Surveillance	OR,	<ol style="list-style-type: none"> <li>1. <i>Operational Research Collection Book, 2005-2009</i>. Ministry of Health, 2010.</li> <li>2. <i>Operational Research Collection Book</i>, 2010-2011. Ministry of Health, 2012.</li> <li>3. <i>Operational Research Collection Book</i>, 2012-2013. Ministry of Health, 2014.</li> <li>4. <i>Policy Brief: Documentation from Operational Research</i>, 2013</li> <li>5. Abstract, "Implementation of e-TB manager in Indonesia improves national reporting frequency and supports informed decision making for TB control," 2013.</li> <li>6. Abstract, "<i>Consolidation of e-TB manager Implementation in Indonesia</i>," 2014.</li> <li>7. Poster Discussion, "From Paper to Digital: Developing Online TB Information System in the Largest Archipelago Country, Indonesia." The Union Conference, 2014.</li> <li>8. Abstract, "Factors associated to referral of tuberculosis suspects by private practitioners to community health centres in Bali Province, Indonesia." I Wayan Gede Artawan Eka Putra, et.al, October 2013. Published at BMC.</li> </ol>
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### Education Materials

Technical Area	Title/Description
Universal Access	<ol style="list-style-type: none"> <li>1. Leaflet, "The important information of TB"</li> <li>2. Leaflet, "How to Collect Your Sputum"</li> </ol>
Infection Control	Poster and Banner, "Cover Your Cough"
PMDT	<ol style="list-style-type: none"> <li>1. Pocket Book for TB MDR patients, containing brief important information about TB-MDR, i.e., patient rights, side-effects of MDR-TB treatment.</li> <li>2. <i>Motivation Leaflet by Local TB community "Pejuang Tangguh" (PETA)</i>. This leaflet contains testimonies of former TB patients who have been cured successfully, to motivate and educate another TB patients.</li> </ol>
TB/HIV	<ol style="list-style-type: none"> <li>1. Poster, "TB can be cured, HIV can be controlled." TB HIV poster in the prison setting.</li> <li>2. Leaflet, "TB/HIV information, the symptoms." This leaflet also includes the names of TB/HIV facilities.</li> <li>3. Flipchart, "TB HIV information"</li> </ol>

### Others

1. **Article, "Menjalin Kasih Demi Kesembuhan TB"** (Providing Loving Care to Support TB Patient Healing), dr Asdi Agus, Technical Officer KNCV, West Sumatra, Padang Express, March 30, 2010.
2. **Article, "Prevent TB Transmission at Health Facilities,"** dr. Fainal Wirawan, MARS, 2nd edition, Medical Service News Letter, Ministry of Health.
3. **Article, "Kalau Semua Patuh, TBC Lebih Mudah Diberantas"** (If Everyone Complies, TB is Easier to Eliminate), Fainal Wirawan, Detik Health, National Online Media, March 8, 2013.
4. KNCV Website as TB CARE I's lead Partner: <http://kncv.or.id/>
5. **Blog Competition Report "Find and Cure a TB Patient, March 24 - July 12 2014."**

6. *Piagam kesepakatan CSO untuk melakukan Patient Centered Approach di Indonesia* (CSO Charter Agreement to Implement a Patient-Centered Approach in Indonesia). 2014.